Additionally when the OBG risk assessment has been completed please also submit the input soil sample data used to calculate the UCLs, via an excel spreadsheet, for verification by the DEQ's statistician, Mr. Hasan Keceli, of the submitted UCLs.

A separate electronic submission, dated July 16, 2015, was received which requested a 60 day extension to the July 28, 2015 deadline for submission of the risk assessment. In light of the time it took for DEQ to review the additional information requested a 90 day extension has been approved and the new submission date for the risk assessment is now October 26, 2015.

If you have any questions or comments concerning this matter, please contact me at (804) 698-4467 or by e-mail at Ashby.Scott@deq.virginia.gov, for risk assessment related questions, please feel free to contact Ms. Sonal Iyer at (804) 698-4259 or by e-mail at Sonal.Iyer@deq.virginia.gov and for any questions regarding statistical analysis or the UCLs please contact Mr. Hasan Keceli at (804) 698-4246 or by email at Hasan.Keceli@deq.virginia.gov.

Sincerely,

Ashby R. Scott
Hazardous Waste Permit Writer
Office of Waste Permitting and Compliance

cc: Andrea Barbieri, EPA, Region III (3LC50)
Aziz Farahmand, DEQ, Blue Ridge Regional Office
Leslie A. Romanchik, DEQ, CO
Sonal Iyer, DEQ, CO
Hasan Keceli, DEQ, CO
Julia King–Collins, DEQ, CO
Central Hazardous Waste Files

Table 1 - Sample Analytical Requirements
Open Burning Ground - Soil Monitoring Program

Sample Location ID	Sample Analytical Method								
	VOCs (8260)	SVOCs (8270)	RCRA Metals (6010/6020/7471)	Chromium, hexavalent (7196)	Perchlorate (6850)	Dioxins/Furans (8290)	Explosives (8330)	Nitroglycerine (8332)	TPH-DRO (8015)
PAD-1	X	X	X	X	X	X	X	X	X
PAD-2	X	X	X	X	X	X	X	X	
PAD-3	X	X	X	X	X	X	X	X	
PAD-4	X	X	X	X	X	X	X	X	X
PAD-5	X	X	X	X	X	X	X	X	
PAD-6	X	X	X	X	X	X	X	X	
PAD-7	X	X	X	X	X	X	X	X	X
PAD-8	X	X	X	X	X	X	X	X	
NB-1	X	X	X			X	X	X	
NB-2	X	X	X			X	X	X	
SB-1	X	X	X			X	X	X	
SB-2	X	X	X			X	X	X	
BERM-1	X	X	X			X	X	X	
POND-1	X	X	X			X	X	X	

Notes:
X indicates sample was analyzed for corresponding analytical method.
Each method was performed for certain Constituents of Potential Concern (COPCs), which are listed on the COPC list included in Appendix C of this Annual Soil Monitoring Report.

Table 2A - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	PAD-1	Q	PAD-2	Q	PAD-3	Q	PAD-4	Q	PAD-5	Q	PAD-6	Q	PAD-7	Q	PAD-8	Q	POND-1	Q	SB-1	Q	SB-2	Q	RL	Action Limit	Method	Unit
1,1-Dichloroethene					*CAS #: 75-35-4*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	1100	8260C	mg/kg
1,2-Dichloroethane					*CAS #: 107-06-2*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	2.2	8260C	mg/kg
1,3,5-Trinitrobenzene					*CAS #: 99-35-4*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	27000	8330B	mg/kg
1,3-Dinitrobenzene					*CAS #: 99-65-0*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	62	8330B	mg/kg
2,4,6-Trinitrotoluene					*CAS #: 118-96-7*																					
7/31/2014	U		U		U		U		U		U		U		U		0.327	J	U		0.527	J	0.25	79	8330B	mg/kg
2,4-Dichlorophenol					*CAS #: 120-83-2*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	1800	8270D	mg/kg
2,4-Dinitrotoluene					*CAS #: 121-14-2*																					
7/31/2014	U		U		U		3.18		0.433		U		U		U		2.28		U		U		0.25	5.5	8330B	mg/kg
2,6-Dinitrotoluene					*CAS #: 606-20-2*																					
7/31/2014	0.418	J	U		U		U		U		U		U		U		-		-		-		0.25	1.2	8330B	mg/kg
2-Amino-4,6-Dinitrotoluene					*CAS #: 35572-78-2*																					
7/31/2014	U		U		U		U		U		U		U		U		U		U		U		0.25	2000	8330B	mg/kg
2-Chlorophenol					*CAS #: 95-57-8*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	5100	8270D	mg/kg
2-Nitrotoluene					*CAS #: 88-72-2*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	13	8330B	mg/kg
3,3'-Dimethylbenzidine					*CAS #: 119-93-7*																					
7/31/2014	U	AJ	U	AJ	U	AJ	U	AJ	U	AJ	U	AJ	U	AJ	U	AJ	-		-		-		1.6	0.16	8270D	mg/kg
3-Methylphenol					*CAS #: 108-39-4*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	31000	8270D	mg/kg
3-Nitrotoluene					*CAS #: 99-08-1*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	62	8330B	mg/kg
4-Amino-2,6-Dinitrotoluene					*CAS #: 19406-51-0*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	0.25	1900	8330B	mg/kg
4-Methylphenol					*CAS #: 106-44-5*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	62000	8270D	mg/kg
4-Nitrophenol					*CAS #: 100-02-7*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		1.6	7	8270D	mg/kg
4-Nitrotoluene					*CAS #: 99-99-0*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	110	8330B	mg/kg

See last page of this report for definitions.

Table 2A - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	*PAD-1*	*Q*	*PAD-2*	*Q*	*PAD-3*	*Q*	*PAD-4*	*Q*	*PAD-5*	*Q*	*PAD-6*	*Q*	*PAD-7*	*Q*	*PAD-8*	*Q*	*POND-1*	*Q*	*SB-1*	*Q*	*SB-2*	*Q*	*RL*	*Action Limit*	*Method*	*Unit*
Acetophenone					*CAS #: 98-86-2*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	100000	8270D	mg/kg
Arsenic					*CAS #: 7440-38-2*																					
7/31/2014	1.4	J	2.2	J	1.2	J	2	J	1.6	J	0.88	J	1.9	J	1.4	J	1.7	J	2.1	J	2.2	J	1	15.8	6010C	mg/kg
Barium					*CAS #: 7440-39-3*																					
7/31/2014	89	J	120	J	92	J	140	J	140	J	92	J	100	J	80	J	92	J	100	J	120	J	20	190000	6010C	mg/kg
Benzene					*CAS #: 71-43-2*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	5.4	8260C	mg/kg
Benzo(a)anthracene					*CAS #: 56-55-3*																					
7/31/2014	U		0.005	J	U		0.027	J	U		U		U		U		-		-		-		0.33	2.1	8270D	mg/kg
Benzo(a)pyrene					*CAS #: 50-32-8*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.02	0.21	8270D	mg/kg
Benzo(b)fluoranthene					*CAS #: 205-99-2*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.33	2.1	8270D	mg/kg
Benzo(k)fluoranthene					*CAS #: 207-08-9*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.33	2.1	8270D	mg/kg
Benzyl Chloride					*CAS #: 100-44-7*																					
7/31/2014	U		U		U		U	J	U		U		U		U		-		-		-		0.005	4.9	8260C	mg/kg
Bromomethane					*CAS #: 74-83-9*																					
7/31/2014	U		U		U		U		U		U		U		U		U		U		U		0.005	32	8260C	mg/kg
Cadmium					*CAS #: 7440-43-9*																					
7/31/2014	0.12	J	0.23	J	0.1	J	0.27	J	0.11	J	0.16	J	0.11	J	0.059	J	0.14	J	0.23	J	0.39	J	0.5	800	6010C	mg/kg
Carbon Tetrachloride					*CAS #: 56-23-5*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.005	3	8260C	mg/kg
Chlorobenzene					*CAS #: 108-90-7*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	1400	8260C	mg/kg
Chloroform					*CAS #: 67-66-3*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	1.5	8260C	mg/kg
Chloromethane					*CAS #: 74-87-3*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	500	8260C	mg/kg
Chromium, hexavalent					*CAS #: 18540-29-9*																					
7/31/2014	U		0.74	J	2.4		U		U		1.6		U		U		-		-		-		1	5.6	7196A	mg/kg
Chromium					*CAS #: 7440-47-3*																					
7/31/2014	13	J	35	J	17	J	16	J	13	J	30	J	13	J	13	J	13	J	19	J	21	J	1		6010C	mg/kg
Dibenz(a,h)anthracene					*CAS #: 53-70-3*																					
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.02	0.21	8270D	mg/kg

Table 2A - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	PAD-1	Q	PAD-2	Q	PAD-3	Q	PAD-4	Q	PAD-5	Q	PAD-6	Q	PAD-7	Q	PAD-8	Q	POND-1	Q	SB-1	Q	SB-2	Q	RL	Action Limit	Method	Unit
Fluoranthene																										
CAS #: 206-44-0																										
7/31/2014	U		0.005	J	U		0.029	J	0.006	J	0.076	J	0.005	J	0.004	J	-		-		-		0.33	22000	8270D	mg/kg
Hexachloroethane																										
CAS #: 67-72-1																										
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	43	8270D	mg/kg
HMX																										
CAS #: 2691-41-0																										
7/31/2014	U	J	U	J	U	J	0.836	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	2.2	49000	8330B	mg/kg
Indeno(1,2,3-cd)pyrene																										
CAS #: 193-39-5																										
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.33	2.1	8270D	mg/kg
Lead																										
CAS #: 7439-92-1																										
7/31/2014	38	J	160	J	280	J	270	J	150	J	610	J	81	J	110	J	86	J	54	J	120	J	0.3	800	6010C	mg/kg
Mercury																										
CAS #: 7439-97-6																										
7/31/2014	U		U		U		U		0.027	J	0.019	J	U		U		-		-		-		0.1	43	7471A	mg/kg
Methylene Chloride																										
CAS #: 75-09-2																										
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	960	8260C	mg/kg
Naphthalene																										
CAS #: 91-20-3																										
7/31/2014	U		U		U		0.034	J	0.005	J	U		0.007	J	U		-		-		-		0.33	18	8270D	mg/kg
Nitrobenzene																										
CAS #: 98-95-3																										
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.25	24	8330B	mg/kg
Nitroglycerin																										
CAS #: 55-63-0																										
7/31/2014	23.1		9.17		174		17.5		11.1		53.1		20.2	J	13.2		8.66		U		U		2.5	62	8330B	mg/kg
Diphenylamine																										
CAS #: 122-39-4																										
7/31/2014	0.073	J	U	J	3.3	J	0.56	J	0.038	J	1.7	J	0.17	J	0.074	J	0.098	J	U	J	0.079	J	1.6	15000	8270D	mg/kg
Perchlorate																										
CAS #: 14797-73-0																										
7/31/2014	U	J	U	J	U	J	0.00491	J	0.00756	J	0.00621	J	0.00181	J	U	J	-		-		-		0.002	720	6850	mg/kg
Phenol																										
CAS #: 108-95-2																										
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.33	180000	8270D	mg/kg
RDX																										
CAS #: 121-82-4																										
7/31/2014	U		U		U		5.28		U		U		U		U		-		-		-		1	24	8330B	mg/kg
Selenium																										
CAS #: 7782-49-2																										
7/31/2014	U		U		U		U		0.41	J	U		U		U		U		U		U		1	5100	6010C	mg/kg
Silver																										
CAS #: 7440-22-4																										
7/31/2014	0.11	J	0.29	J	0.14	J	0.15	J	0.11	J	U		U		0.11	J	-		-		-		1	5100	6010C	mg/kg
Tetrachloroethene																										
CAS #: 127-18-4																										
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	110	8260C	mg/kg
Tetryl																										
CAS #: 479-45-8																										
7/31/2014	U	J	U	J	U	J	U	J	U	J	U	J	U	J	U	J	-		-		-		0.65	1200	8330B	mg/kg

See last page of this report for definitions.

Table 2A - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	*PAD-1*	*Q*	*PAD-2*	*Q*	*PAD-3*	*Q*	*PAD-4*	*Q*	*PAD-5*	*Q*	*PAD-6*	*Q*	*PAD-7*	*Q*	*PAD-8*	*Q*	*POND-1*	*Q*	*SB-1*	*Q*	*SB-2*	*Q*	*RL*	*Action Limit*	*Method*	*Unit*
Toluene					*CAS #: 108-88-3*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	45000	8260C	mg/kg
TPH (as Diesel)					*CAS #: Q797*																					
7/31/2014	U	J	-		-		190	J	-		-		8.4	J	-		-		-		-		20	11000	8015C	mg/kg
Trichloroethene					*CAS #: 79-01-6*																					
7/31/2014	U		U		U		U		U		U		U		U		U		U		U		0.005	6.4	8260C	mg/kg
Vinyl Chloride					*CAS #: 75-01-4*																					
7/31/2014	U		U		U		U		U		U		U		U		-		-		-		0.005	1.7	8260C	mg/kg

Definitions: RL Denotes reporting limit (obtained from permit modification – Table 1 Attachment II.C-23-24, updated September 27, 2011, Class 3 permit modification updated June 2014). RLs are equal to or greater than actual laboratory QLs, except where noted in the data validation report. However, RLs, QLs and method detection limit (DL) are less than the AL except where noted with an "A" qualifier. See data validation for actual laboratory QL. **Q** Denotes data validation qualifie
U Denotes analyte not detected at or above DL. **AL** Denotes permit Action limit (obtained from permit modification – Table 1 Attachment II.C-23-24, updated September 27, 2011, Class 3 permit modification, updated June 2014).
J Denotes is estimated. **UJ** Denotes analyte was analyzed for but not detected at or above the DL and estimated due to data validation.
A Laboratory QL and laboratory DL above permit Action limit (see data validation report).
R Denotes result rejected. (-) Denotes not sampled.
NOTES:
Results for Method 8290 Dioxin/Furan submitted as a separate report.
For the April 2013 event, Method 8270D aliquots for POND-1 were recollected on September 10, 2013.

See last page of this report for definitions.

Table 2B - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	BG-1A	Q	BG-1B	Q	BG-1C	Q	BG-1D	Q	BG-2A	Q	BG-2B	Q	BG-2C	Q	BG-2D	Q	NB-1	Q	NB-2	Q	BERM-1	Q	RL	Action Limit	Method	Unit
1,1-Dichloroethene	*CAS #: 75-35-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	1100	8260C	mg/kg
1,2-Dichloroethane	*CAS #: 107-06-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	2.2	8260C	mg/kg
1,3,5-Trinitrobenzene	*CAS #: 99-35-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	27000	8330B	mg/kg
1,3-Dinitrobenzene	*CAS #: 99-65-0*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	62	8330B	mg/kg
2,4,6-Trinitrotoluene	*CAS #: 118-96-7*																									
7/31/2014	-		-		-		-		-		-		-		-		0.131	J	U		U		0.25	79	8330B	mg/kg
2,4-Dichlorophenol	*CAS #: 120-83-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	1800	8270D	mg/kg
2,4-Dinitrotoluene	*CAS #: 121-14-2*																									
7/31/2014	-		-		-		-		-		-		-		-		U		U		U		0.25	5.5	8330B	mg/kg
2,6-Dinitrotoluene	*CAS #: 606-20-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	1.2	8330B	mg/kg
2-Amino-4,6-Dinitrotoluene	*CAS #: 35572-78-2*																									
7/31/2014	-		-		-		-		-		-		-		-		U		U		U		0.25	2000	8330B	mg/kg
2-Chlorophenol	*CAS #: 95-57-8*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	5100	8270D	mg/kg
2-Nitrotoluene	*CAS #: 88-72-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	13	8330B	mg/kg
3,3'-Dimethylbenzidine	*CAS #: 119-93-7*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		1.6	0.16	8270D	mg/kg
3-Methylphenol	*CAS #: 108-39-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	31000	8270D	mg/kg
3-Nitrotoluene	*CAS #: 99-08-1*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	62	8330B	mg/kg
4-Amino-2,6-Dinitrotoluene	*CAS #: 19406-51-0*																									
7/31/2014	-		-		-		-		-		-		-		-		U	J	U	J	U	J	0.25	1900	8330B	mg/kg
4-Methylphenol	*CAS #: 106-44-5*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	62000	8270D	mg/kg
4-Nitrophenol	*CAS #: 100-02-7*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		1.6	7	8270D	mg/kg
4-Nitrotoluene	*CAS #: 99-99-0*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	110	8330B	mg/kg

See last page of this report for definitions.

Table 2B - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	BG-1A	Q	BG-1B	Q	BG-1C	Q	BG-1D	Q	BG-2A	Q	BG-2B	Q	BG-2C	Q	BG-2D	Q	NB-1	Q	NB-2	Q	BERM-1	Q	RL	Action Limit	Method	Unit
Acetophenone					CAS #: 98-86-2																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	100000	8270D	mg/kg
Arsenic					CAS #: 7440-38-2																					
7/31/2014	-		-		-		-		-		-		-		-		1.6	J	1.3	J	1.8	J	1	15.8	6010C	mg/kg
Barium					CAS #: 7440-39-3																					
7/31/2014	-		-		-		-		-		-		-		-		110	J	100	J	81	J	20	190000	6010C	mg/kg
Benzene					CAS #: 71-43-2																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	5.4	8260C	mg/kg
Benzo(a)anthracene					CAS #: 56-55-3																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	2.1	8270D	mg/kg
Benzo(a)pyrene					CAS #: 50-32-8																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.02	0.21	8270D	mg/kg
Benzo(b)fluoranthene					CAS #: 205-99-2																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	2.1	8270D	mg/kg
Benzo(k)fluoranthene					CAS #: 207-08-9																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	2.1	8270D	mg/kg
Benzyl Chloride					CAS #: 100-44-7																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	4.9	8260C	mg/kg
Bromomethane					CAS #: 74-83-9																					
7/31/2014	-		-		-		-		-		-		-		-		U		U		U		0.005	32	8260C	mg/kg
Cadmium					CAS #: 7440-43-9																					
7/31/2014	-		-		-		-		-		-		-		-		0.43	J	0.2	J	0.16	J	0.5	800	6010C	mg/kg
Carbon Tetrachloride					CAS #: 56-23-5																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	3	8260C	mg/kg
Chlorobenzene					CAS #: 108-90-7																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	1400	8260C	mg/kg
Chloroform					CAS #: 67-66-3																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	1.5	8260C	mg/kg
Chloromethane					CAS #: 74-87-3																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	500	8260C	mg/kg
Chromium, hexavalent					CAS #: 18540-29-9																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		1	5.6	7196A	mg/kg
Chromium					CAS #: 7440-47-3																					
7/31/2014	-		-		-		-		-		-		-		-		15	J	12	J	14	J	1		6010C	mg/kg
Dibenz(a,h)anthracene					CAS #: 53-70-3																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.02	0.21	8270D	mg/kg

Table 2B - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	BG-1A	Q	BG-1B	Q	BG-1C	Q	BG-1D	Q	BG-2A	Q	BG-2B	Q	BG-2C	Q	BG-2D	Q	NB-1	Q	NB-2	Q	BERM-1	Q	RL	Action Limit	Method	Unit
Fluoranthene	*CAS #: 206-44-0*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	22000	8270D	mg/kg
Hexachloroethane	*CAS #: 67-72-1*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	43	8270D	mg/kg
HMX	*CAS #: 2691-41-0*																									
7/31/2014	-		-		-		-		-		-		-		-		U	J	0.224	J	U	J	2.2	49000	8330B	mg/kg
Indeno(1,2,3-cd)pyrene	*CAS #: 193-39-5*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	2.1	8270D	mg/kg
Lead	*CAS #: 7439-92-1*																									
7/31/2014	-		-		-		-		-		-		-		-		240	J	210	J	120	J	0.3	800	6010C	mg/kg
Mercury	*CAS #: 7439-97-6*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.1	43	7471A	mg/kg
Methylene Chloride	*CAS #: 75-09-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	960	8260C	mg/kg
Naphthalene	*CAS #: 91-20-3*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	18	8270D	mg/kg
Nitrobenzene	*CAS #: 98-95-3*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.25	24	8330B	mg/kg
Nitroglycerin	*CAS #: 55-63-0*																									
7/31/2014	-		-		-		-		-		-		-		-		1.98		0.741	J	14		2.5	62	8330B	mg/kg
Diphenylamine	*CAS #: 122-39-4*																									
7/31/2014	-		-		-		-		-		-		-		-		0.2	J	0.17	J	0.12	J	1.6	15000	8270D	mg/kg
Perchlorate	*CAS #: 14797-73-0*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.002	720	6850	mg/kg
Phenol	*CAS #: 108-95-2*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.33	180000	8270D	mg/kg
RDX	*CAS #: 121-82-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		1	24	8330B	mg/kg
Selenium	*CAS #: 7782-49-2*																									
7/31/2014	-		-		-		-		-		-		-		-		U		U		U		1	5100	6010C	mg/kg
Silver	*CAS #: 7440-22-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		1	5100	6010C	mg/kg
Tetrachloroethene	*CAS #: 127-18-4*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	110	8260C	mg/kg
Tetryl	*CAS #: 479-45-8*																									
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.65	1200	8330B	mg/kg

Table 2B - Summary of Analytical Results
Open Burning Ground - Soil Monitoring Program

All Results Reported on a Dry Weight Basis

Event Date	*BG-1A*	*Q*	*BG-1B*	*Q*	*BG-1C*	*Q*	*BG-1D*	*Q*	*BG-2A*	*Q*	*BG-2B*	*Q*	*BG-2C*	*Q*	*BG-2D*	*Q*	*NB-1*	*Q*	*NB-2*	*Q*	*BERM-1*	*Q*	*RL*	*Action Limit*	*Method*	*Unit*
Toluene					*CAS #: 108-88-3*																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	45000	8260C	mg/kg
TPH (as Diesel)					*CAS #: Q797*																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		20	11000	8015C	mg/kg
Trichloroethene					*CAS #: 79-01-6*																					
7/31/2014	-		-		-		-		-		-		-		-		U		U		U		0.005	6.4	8260C	mg/kg
Vinyl Chloride					*CAS #: 75-01-4*																					
7/31/2014	-		-		-		-		-		-		-		-		-		-		-		0.005	1.7	8260C	mg/kg

Definitions: RL Denotes reporting limit. **Q** Denotes data validation qualifier. **U** Denotes analyte not detected at or above DL. AL Denotes permit Action limit.
J Denotes result is estimated. **UJ** Denotes analyte was analyzed for but not detected at or above the DL and estimated due to data validation.
A Denotes laboratory QL and laboratory DL above permit Action limit (see data validation report).
R Denotes result rejected. (-) Denotes not sampled. **AL and RL** obtained from permit modification – Table 1 Attachment II.C-23-24, updated June 2014, Class I Permit Mod

NOTES:
Results for Method 8290 Dioxin/Furan submitted as a separate report.
Laboratory QL at or below the RL and AL unless noted (see data validation report). In these cases, the result is evaluated to the method detection limit (MDL/DL). MDL is less than the RL and AL unless noted.

Table 3
Method 8290A Dioxin/Furan Results
July 31, 2014 Event
2,3,7,8 - TCDD Toxicity Equivalent Quotient (TEQ)
Radford Facility AAP, Open Burning Ground Soil Monitoring Program
All results presented in ng/kg=pg/g=ppt

Sample Location ID			PAD-1				PAD-2				PAD-3				PAD-4			
Depth			Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches	
Constituent	TEF	Action Level	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ
1,2,3,4,6,7,8-HpCDD	0.01		B		9.3	0.093	B		21	0.21	B		24	0.24	B		78	0.78
1,2,3,4,6,7,8-HpCDF	0.01		Q B J	U	ND		B J	J	3.4	0.034	Q B J	J	3.4	0.034	B		9.2	0.092
1,2,3,4,7,8,9-HpCDF	0.01		Q B J	U	ND		B J	U	ND		Q B J	U	ND		Q B J	U	ND	
1,2,3,4,7,8-HxCDD	0.1		Q B J	U	ND		Q B J	J	0.71	0.071	B J	U	ND		B J	J	2.7	0.27
1,2,3,4,7,8-HxCDF	0.1			U	ND		Q B J	J	0.99	0.099	Q B J	U	ND		Q B J	J	1.8	0.18
1,2,3,6,7,8-HxCDD	0.1		Q B J	U	ND		B J	J	1.7	0.17	B J	J	1.2	0.12	B J	J	5.4	0.54
1,2,3,6,7,8-HxCDF	0.1		Q B J	U	ND		Q B J	U	ND		Q B J	U	ND		Q B J	J	1.4	0.14
1,2,3,7,8,9-HxCDD	0.1		Q B J	U	ND		C B J	J	1.9	0.19	Q B J	U	ND		C B	J	8.4	0.84
1,2,3,7,8,9-HxCDF	0.1			U	ND		B J	U	ND			U	ND		Q B J	U	ND	
1,2,3,7,8-PeCDD	1		Q J	J	0.17	0.17	Q J	J	0.65	0.65	Q J	J	0.37	0.37	J	J	4.1	4.1
1,2,3,7,8-PeCDF	0.03			U	ND		Q B J	J	0.31	0.0093	Q B J	J	0.32	0.0096	Q B J	J	0.65	0.0195
2,3,4,6,7,8-HxCDF	0.1			U	ND		B J	U	ND		B J	U	ND		Q B J	U	ND	
2,3,4,7,8-PeCDF	0.3		Q B J	U	ND		B J	U	ND		B J	U	ND		Q B J	J	0.92	0.276
2,3,7,8-TCDD	1			U	ND		Q B J	J	0.15	0.15		U	ND		B		2.5	2.5
2,3,7,8-TCDF	0.1			U	ND		J	J	0.48	0.048	Q J	J	0.19	0.019	X		1.4	0.14
OCDD	0.0003		B	J	560	0.168	B	J	250	0.075	B	J	340	0.102	B	J	630	0.189
OCDF	0.0003		Q B J	U	ND		B J	J	7.6	0.00228	Q B J	U	ND		B		18	0.005
2,3,7,8 Toxicity Equivalence (TEQ) ng/kg		**18 ng/kg**		**J**		***0.43***		**J**		***1.71***		**J**		***0.89***		**J**		***10.07***

Sample Location ID			PAD-5				PAD-6				PAD-7				PAD-8			
Depth			Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches	
Constituent	TEF	Action Level	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ
1,2,3,4,6,7,8-HpCDD	0.01		B		14	0.14	B		25	0.25	B		18	0.18	B		8.5	0.085
1,2,3,4,6,7,8-HpCDF	0.01		Q B J	J	3.4	0.034	B J		4.6	0.046	BJ	J	4.6	0.046	B J	U	ND	
1,2,3,4,7,8,9-HpCDF	0.01		Q B J	U	ND		Q B J	U	ND		Q B J	U	ND		B J	U	ND	
1,2,3,4,7,8-HxCDD	0.1		Q B J	U	ND		Q B J	U	ND		Q B J	U	ND		B J		ND	
1,2,3,4,7,8-HxCDF	0.1		C B J	J	1	0.1	C B J	J	1.7	0.17	B J	J	1.6	0.16	Q B J	U	ND	
1,2,3,6,7,8-HxCDD	0.1		Q B J	J	0.83	0.083	Q B J	J	1.4	0.14	B J	J	1.2	0.12	Q B J	U	ND	
1,2,3,6,7,8-HxCDF	0.1		Q B J	U	ND		B J	J	0.94	0.094	B J	J	0.94	0.094	B J	U	ND	
1,2,3,7,8,9-HxCDD	0.1		Q B J	J	1.4	0.14	C B J	J	2	0.2	B J	J	1.7	0.17	B J	U	ND	
1,2,3,7,8,9-HxCDF	0.1		Q B J	U	ND		Q B J	U	ND		Q B J	U	ND		Q B J	U	ND	
1,2,3,7,8-PeCDD	1		J	J	0.56	0.56	Q J	J	0.83	0.83	Q J	J	0.57	0.57	Q J	J	0.33	0.33
1,2,3,7,8-PeCDF	0.03		B J	J	0.29	0.0087	Q B J	J	0.47	0.0141	Q B J	J	0.58	0.0174	Q B J	U	ND	
2,3,4,6,7,8-HxCDF	0.1		Q B J	U	ND		B J	J	0.96	0.096	Q B J	U	ND		B J	U	ND	
2,3,4,7,8-PeCDF	0.3		B Q J	U	ND		B J	J	1.1	0.33	Q B J	J	0.86	0.258	Q B J	U	ND	
2,3,7,8-TCDD	1		Q B J	J	0.26	0.26	Q B J	J	0.29	0.29		U	ND			U	ND	
2,3,7,8-TCDF	0.1		Q J	J	0.65	0.065	CON J	J	0.79	0.079	CON Q J	J	0.61	0.061	Q J	J	0.4	0.04
OCDD	0.0003		B	J	160	0.048	B	J	230	0.069	B	J	170	0.051	B	J	110	0.033
OCDF	0.0003		B J	U	ND		B J	U	ND		B J	J	9.5	0.00285	B J	U	ND	
2,3,7,8 Toxicity Equivalence (TEQ) ng/kg		**18 ng/kg**		**J**		***1.44***		**J**		***2.61***		**J**		***1.7***		**J**		***0.49***

JCF/LC 2/18/15

Table 3
Method 8290A Dioxin/Furan Results
July 31, 2014 Event

Sample Location ID			POND-1				SB-1				SB-2				PAD-XX (Blind Dup. - PAD-1)			
Depth			Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches	
Constituent	TEF	Action Level	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ
1,2,3,4,6,7,8-HpCDD	0.01		B		28	0.28	B		39	0.39	B		64	0.64	B		7	0.07
1,2,3,4,6,7,8-HpCDF	0.01		Q B J		4.6	0.046	Q B J	J	4.6	0.046	B	J	9.2	0.092	B J	U	ND	
1,2,3,4,7,8,9-HpCDF	0.01		Q B J	U	ND		Q B J	U	ND		B J	U	ND			U	ND	
1,2,3,4,7,8-HxCDD	0.1		Q B J	J	0.77	0.077	Q B J	U	ND		B J	J	1.2	0.12	Q B J	U	ND	
1,2,3,4,7,8-HxCDF	0.1		C B J	J	1.2	0.12	Q B J	J	0.82	0.082	C B J	J	3.1	0.31	Q B J	U	ND	
1,2,3,6,7,8-HxCDD	0.1		B J	J	2	0.2	Q B J	J	1.1	0.11	B J	J	2.2	0.22	Q B J	U	ND	
1,2,3,6,7,8-HxCDF	0.1		Q B J	U	ND		Q BJ	U	ND		B J	J	1.6	0.16	Q B J	U	ND	
1,2,3,7,8,9-HxCDD	0.1		C B J	J	2.2	0.22	C B J	J	1.7	0.17	C B J	J	3.1	0.31	Q B J	U	ND	
1,2,3,7,8,9-HxCDF	0.1		Q B J	U	ND			U	ND			U	ND			U	ND	
1,2,3,7,8-PeCDD	1.0		Q J	J	0.78	0.78	Q J	J	0.52	0.52	Q J	J	1.3	1.3	Q J	J	0.35	0.35
1,2,3,7,8-PeCDF	0.03			U	ND		Q B J	J	0.28	0.0084	B J	J	1.1	0.033	Q B J	U	ND	
2,3,4,6,7,8-HxCDF	0.1		Q B J	U	ND		B J	U	ND		B J	J	1.4	0.14	Q B J	U	ND	
2,3,4,7,8-PeCDF	0.3		B J	U	ND		Q B J	U	ND		B J	J	1.8	0.54	Q B J	U	ND	
2,3,7,8-TCDD	1.0			U	ND			U	ND		Q B J	J	0.42	0.42		U	ND	
2,3,7,8-TCDF	0.1		CON Q J		0.65	0.065	Q J	J	0.42	0.042	CON	J	1.7	0.17	J	J	0.14	0.014
OCDD	0.0003		B	J	360	0.108	B	J	1500	0.45	B	J	2200	0.66	B	J	65	0.0195
OCDF	0.0003		B J		11	0.0033	Q B J	J	11	0.0033	J	J	18	0.0054	Q B J	U	ND	
2,3,7,8 Toxicity Equivalence (TEQ) ng/kg		**18 ng/kg**		**J**		***1.90***		**J**		***1.82***		**J**		***5.12***		**J**		***0.45***

Sample Location ID			BERM-1				NB-1				NB-2			
Depth			Lab	Val	0-6 inches		Lab	Val	0-6 inches		Lab	Val	0-6 inches	
Constituent	TEF	Action Level	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ	Flag	Flag	Result	TEQ
1,2,3,4,6,7,8-HpCDD	0.01		B		17	0.17	B		63	0.63	B		42	0.42
1,2,3,4,6,7,8-HpCDF	0.01		B J	J	3.4	0.034	Q B		15	0.15	B	J	7.8	0.078
1,2,3,4,7,8,9-HpCDF	0.01		B J	U	ND		Q B J	U	ND		Q B J	U	ND	
1,2,3,4,7,8-HxCDD	0.1		B J	U	ND		B J	J	1.3	0.13	Q B J	J	0.87	0.087
1,2,3,4,7,8-HxCDF	0.1		C B J	J	1.2	0.12	Q B J	J	4.8	0.48	C B J	J	1.8	0.18
1,2,3,6,7,8-HxCDD	0.1		B J	J	1.6	0.16	B J	J	3.2	0.32	B J	J	2	0.2
1,2,3,6,7,8-HxCDF	0.1		Q B J	U	ND		Q B J	J	2.5	0.25	Q B J	J	1.2	0.12
1,2,3,7,8,9-HxCDD	0.1		Q B J	J	1.8	0.18	C B J	J	4.2	0.42	C B J	J	2.8	0.28
1,2,3,7,8,9-HxCDF	0.1		Q B J	U	ND			U	ND			U	ND	
1,2,3,7,8-PeCDD	1.0		J	J	0.67	0.67	Q J	J	1.9	1.9	Q J	J	1.1	1.1
1,2,3,7,8-PeCDF	0.03		B J	J	0.45	0.0135	Q B J	J	2.2	0.066	B J	J	1.2	0.036
2,3,4,6,7,8-HxCDF	0.1		Q B J	U	ND		Q B J	J	1.8	0.18	B J	U	ND	
2,3,4,7,8-PeCDF	0.3		Q B J	U	ND		B J	J	2.8	0.84	B J	J	1.2	0.36
2,3,7,8-TCDD	1.0			U	ND		Q B J	J	0.47	0.47		U	ND	
2,3,7,8-TCDF	0.1		CON Q	J	1	0.1	CON Q		3.4	0.34	CON Q		1.9	0.19
OCDD	0.0003		B	J	180	0.054	B	J	560	0.168	B	J	410	0.123
OCDF	0.0003		B J	U	ND		B		34	0.0102	B		18	0.0054
2,3,7,8 Toxicity Equivalence (TEQ) ng/kg		**18 ng/kg**		**J**		***1.50***		**J**		***6.35***		**J**		***3.18***

Notes: Analytical Method: SW-846 8290A -TestAmerica Knoxville, Knoxville, TN. P:\B03\200\B03204\B03204-207\WORK\Table 3 - Dioxin-Furan TEF Table QBG 2014.xls

TEF Denotes USEPA Region 3 Toxicity Equivalence Factor based on WHO June 2005 values. (See www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm).

2,3,7,8 - TCDD Toxicity Equivalence Quotient (TEQ) ng/kg. Calculated by summing the multiplication of detections by the respective TEF of results above the EDL.

QL-Limit of Quantitation/sample specific QL. EDL-Laboratory Estimated Detection Limit See analytical results for sample specific QL. PAD-XX is a blind duplicate for PAD-1.

Data Validation Qualifiers: "Val Flag" denotes data validation data qualifier.

U - denotes not detected at or above the EDL. See certificate of analysis for sample specific estimated detection limit.

JA - Denotes result positively identified, but result is estimated. J - Denotes result estimated. UJ - denotes analyte not detected above DL, EDL/QL estimated due to validation.

Laboratory Data Qualifiers: "Lab Flag" denotes Laboratory data qualifier.

ND denotes analyte not detected above estimated detection limit and constituent specific TEQ was not calculated. X See project narrative. S denotes ion suppression.

J Denotes result reported below QL. Q Denotes the estimated maximum possible concentration. B Denotes method blank contamination (see data validation report). C denotes co-eluting isomer.

CON denotes confirmation analysis. H denotes OCDD/F reported from separate analytical analysis.

Source for Action Level: United States Environmental Protection Agency Regions 3, 6, and 9. (Nov 2013). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm Action Level updated June 12, 2014.

2/18/15

Table 4

Summary of Non-Carcinogenic Compounds of Potential Concern (COPC)
Comparision to 1/10 of the Action Level
Open Burning Ground, RFAAP - July 2014 Soil Monitoring Event

Analyte	Sample ID	Method	Result mg/kg	Flag	Action level mg/kg	1/10 Action level mg/kg	Quarter	COPC
Diphenylamine	PAD-7	8270D	0.17	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-3	8270D	3.3	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-4	8270D	0.56	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-5	8270D	0.038	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-1	8270D	0.073	J	15000	1500	7/31/2014	n
Diphenylamine	BERM-1	8270D	0.12	J	15000	1500	7/31/2014	n
Diphenylamine	POND-1	8270D	0.098	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-6	8270D	1.7	J	15000	1500	7/31/2014	n
Diphenylamine	SB-2	8270D	0.079	J	15000	1500	7/31/2014	n
Diphenylamine	NB-2	8270D	0.17	J	15000	1500	7/31/2014	n
Diphenylamine	NB-1	8270D	0.2	J	15000	1500	7/31/2014	n
Diphenylamine	PAD-8	8270D	0.074	J	15000	1500	7/31/2014	n
Perchlorate	SB-1	6850	0.00373	J	720	72	7/31/2014	n
Perchlorate	PAD-7	6850	0.00181	J	720	72	7/31/2014	n
Perchlorate	PAD-6	6850	0.00621	J	720	72	7/31/2014	n
Perchlorate	PAD-5	6850	0.00756	J	720	72	7/31/2014	n
Perchlorate	PAD-4	6850	0.00491	J	720	72	7/31/2014	n
Perchlorate	POND-1	6850	0.00193	J	720	72	7/31/2014	n
HMX	NB-2	8330B	0.224	J	49000	4900	7/31/2014	n
HMX	PAD-4	8330B	0.836	J	49000	4900	7/31/2014	n

Table 4

Summary of Non-Carcinogenic Compounds of Potential Concern (COPC)
Comparision to 1/10 of the Action Level
Open Burning Ground, RFAAP - July 2014 Soil Monitoring Event

Analyte	Sample ID	Method	Result mg/kg	Flag	Action level mg/kg	1/10 Action level mg/kg	Quarter	COPC
Nitroglycerin	PAD-6	8330B	53.1		62	6.2	7/31/2014	n
Nitroglycerin	PAD-5	8330B	11.1		62	6.2	7/31/2014	n
Nitroglycerin	PAD-4	8330B	17.5		62	6.2	7/31/2014	n
Nitroglycerin	PAD-8	8330B	13.2		62	6.2	7/31/2014	n
Nitroglycerin	NB-1	8330B	1.98		62	6.2	7/31/2014	n
Nitroglycerin	PAD-3	8330B	174		62	6.2	7/31/2014	n
Nitroglycerin	PAD-2	8330B	9.17		62	6.2	7/31/2014	n
Nitroglycerin	NB-2	8330B	0.741	J	62	6.2	7/31/2014	n
Nitroglycerin	PAD-1	8330B	23.1		62	6.2	7/31/2014	n
Nitroglycerin	PAD-7	8330B	20.2	J	62	6.2	7/31/2014	n
Nitroglycerin	BERM-1	8330B	14		62	6.2	7/31/2014	n
Nitroglycerin	POND-1	8330B	8.66		62	6.2	7/31/2014	n
Mercury	PAD-6	7471A	0.019	J	43	4.3	7/31/2014	n
Mercury	PAD-5	7471A	0.027	J	43	4.3	7/31/2014	n
Diethylphthalate	POND-1	8270D	0.36		490000	49000	7/31/2014	n
Diethylphthalate	SB-2	8270D	0.51		490000	49000	7/31/2014	n
Diethylphthalate	NB-2	8270D	0.65		490000	49000	7/31/2014	n
Diethylphthalate	NB-1	8270D	1.2		490000	49000	7/31/2014	n
Diethylphthalate	PAD-4	8270D	0.42	J	490000	49000	7/31/2014	n
Diethylphthalate	PAD-6	8270D	0.78	J	490000	49000	7/31/2014	n
Diethylphthalate	PAD-7	8270D	0.17	J	490000	49000	7/31/2014	n
Fluoranthene	PAD-8	8270D	0.004	J	22000	2200	7/31/2014	n
Fluoranthene	PAD-4	8270D	0.029	J	22000	2200	7/31/2014	n
Fluoranthene	PAD-7	8270D	0.005	J	22000	2200	7/31/2014	n
Fluoranthene	PAD-5	8270D	0.006	J	22000	2200	7/31/2014	n
Fluoranthene	PAD-2	8270D	0.005	J	22000	2200	7/31/2014	n
Fluoranthene	PAD-6	8270D	0.076	J	22000	2200	7/31/2014	n

Table 4

Summary of Non-Carcinogenic Compounds of Potential Concern (COPC)
Comparision to 1/10 of the Action Level
Open Burning Ground, RFAAP - July 2014 Soil Monitoring Event

Analyte	Sample ID	Method	Result mg/kg	Flag	Action level mg/kg	1/10 Action level mg/kg	Quarter	COPC
Di-n-butylphthalate	NB-2	8270D	0.54		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-3	8270D	56		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-2	8270D	0.12	J	62000	6200	7/31/2014	n
Di-n-butylphthalate	POND-1	8270D	0.4		62000	6200	7/31/2014	n
Di-n-butylphthalate	BERM-1	8270D	2.1		62000	6200	7/31/2014	n
Di-n-butylphthalate	SB-2	8270D	2.4		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-8	8270D	0.43		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-1	8270D	0.32		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-5	8270D	0.19		62000	6200	7/31/2014	n
Di-n-butylphthalate	NB-1	8270D	0.99		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-4	8270D	1.1		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-6	8270D	20		62000	6200	7/31/2014	n
Di-n-butylphthalate	PAD-7	8270D	0.48	J	62000	6200	7/31/2014	n
Selenium	PAD-5	6010C	0.41	J	5100	510	7/31/2014	n
Barium	PAD-6	6010C	92	J	190000	19000	7/31/2014	n
Barium	NB-1	6010C	110	J	190000	19000	7/31/2014	n
Barium	PAD-1	6010C	89	J	190000	19000	7/31/2014	n
Barium	NB-2	6010C	100	J	190000	19000	7/31/2014	n
Barium	PAD-4	6010C	140	J	190000	19000	7/31/2014	n
Barium	PAD-3	6010C	92	J	190000	19000	7/31/2014	n
Barium	PAD-5	6010C	140	J	190000	19000	7/31/2014	n
Barium	PAD-2	6010C	120	J	190000	19000	7/31/2014	n
Barium	PAD-7	6010C	100	J	190000	19000	7/31/2014	n
Barium	BERM-1	6010C	81	J	190000	19000	7/31/2014	n
Barium	POND-1	6010C	92	J	190000	19000	7/31/2014	n
Barium	PAD-8	6010C	80	J	190000	19000	7/31/2014	n
Barium	SB-2	6010C	120	J	190000	19000	7/31/2014	n
Barium	SB-1	6010C	100	J	190000	19000	7/31/2014	n

Table 4

Summary of Non-Carcinogenic Compounds of Potential Concern (COPC)
Comparision to 1/10 of the Action Level
Open Burning Ground, RFAAP - July 2014 Soil Monitoring Event

Analyte	Sample ID	Method	Result mg/kg	Flag	Action level mg/kg	1/10 Action level mg/kg	Quarter	COPC
Silver	PAD-8	6010C	0.11	J	5100	510	7/31/2014	n
Silver	PAD-5	6010C	0.11	J	5100	510	7/31/2014	n
Silver	PAD-4	6010C	0.15	J	5100	510	7/31/2014	n
Silver	PAD-1	6010C	0.11	J	5100	510	7/31/2014	n
Silver	PAD-3	6010C	0.14	J	5100	510	7/31/2014	n
Silver	PAD-2	6010C	0.29	J	5100	510	7/31/2014	n
Cadmium	PAD-3	6010C	0.1	J	800	80	7/31/2014	n
Cadmium	SB-2	6010C	0.39	J	800	80	7/31/2014	n
Cadmium	SB-1	6010C	0.23	J	800	80	7/31/2014	n
Cadmium	NB-2	6010C	0.2	J	800	80	7/31/2014	n
Cadmium	PAD-6	6010C	0.16	J	800	80	7/31/2014	n
Cadmium	BERM-1	6010C	0.16	J	800	80	7/31/2014	n
Cadmium	PAD-8	6010C	0.059	J	800	80	7/31/2014	n
Cadmium	POND-1	6010C	0.14	J	800	80	7/31/2014	n
Cadmium	PAD-5	6010C	0.11	J	800	80	7/31/2014	n
Cadmium	PAD-7	6010C	0.11	J	800	80	7/31/2014	n
Cadmium	NB-1	6010C	0.43	J	800	80	7/31/2014	n
Cadmium	PAD-2	6010C	0.23	J	800	80	7/31/2014	n
Cadmium	PAD-1	6010C	0.12	J	800	80	7/31/2014	n
Cadmium	PAD-4	6010C	0.27	J	800	80	7/31/2014	n

Notes:
Action Level based on Table 1 Attachment II.C-23-24 of June 2014 Class I permit modification
J - denotes result less than the QL
n - denotes Non-carcinogenic Compound of Potential Concern based on Regional Screening Level (RSL) Summary Table Jan 2015
See data validation report for final validated results.

Summary of 3,3-Dimethylbenzidine Results - OBG Annual Soil Monitoring - RFAAP, Radford VA

Sample Date	SampleID	Analyte	Lab Result (mg/kg)	LOQ	LOD	Dilution Factor
07-Jan-08	BERM-1	3,3'-Dimethylbenzidine	U	1.9	0.075	1
19-Nov-08	BERM-1	3,3'-Dimethylbenzidine	U	1.8	0.072	1
28-Jan-09	BERM-1	3,3'-Dimethylbenzidine	U	3.9	0.15	2
09-Dec-09	BERM-1	3,3'-Dimethylbenzidine	U	2	0.079	1
02-Mar-10	BERM-1	3,3'-Dimethylbenzidine	U	1.9	0.076	1
18-Nov-10	BERM-1	3,3'-Dimethylbenzidine	U	1.9	0.076	1
31-Jan-11	BERM-1	3,3'-Dimethylbenzidine	U	1.9	0.075	1
08-Jan-08	NB-1	3,3'-Dimethylbenzidine	U	2	0.079	1
19-Nov-08	NB-1	3,3'-Dimethylbenzidine	U	3.9	0.15	2
28-Jan-09	NB-1	3,3'-Dimethylbenzidine	U	2.1	0.082	1
09-Dec-09	NB-1	3,3'-Dimethylbenzidine	U	2	0.077	1
02-Mar-10	NB-1	3,3'-Dimethylbenzidine	U	2	0.08	1
18-Nov-10	NB-1	3,3'-Dimethylbenzidine	U	2.1	0.081	1
31-Jan-11	NB-1	3,3'-Dimethylbenzidine	U	2	0.079	1
08-Jan-08	NB-2	3,3'-Dimethylbenzidine	U	1.9	0.076	1
19-Nov-08	NB-2	3,3'-Dimethylbenzidine	U	1.8	0.071	1
28-Jan-09	NB-2	3,3'-Dimethylbenzidine	U	3.7	0.15	2
09-Dec-09	NB-2	3,3'-Dimethylbenzidine	U	1.9	0.076	1
02-Mar-10	NB-2	3,3'-Dimethylbenzidine	U	3.8	0.15	2
18-Nov-10	NB-2	3,3'-Dimethylbenzidine	U	3.8	0.15	2
31-Jan-11	NB-2	3,3'-Dimethylbenzidine	U	1.9	0.075	1
07-Jan-08	PAD-1	3,3'-Dimethylbenzidine	U	1.9	0.075	1
24-Nov-08	PAD-1	3,3'-Dimethylbenzidine	U	1.9	0.074	1
28-Jan-09	PAD-1	3,3'-Dimethylbenzidine	U	3.9	0.15	2
09-Dec-09	PAD-1	3,3'-Dimethylbenzidine	U	1.8	0.072	1
02-Mar-10	PAD-1	3,3'-Dimethylbenzidine	U	1.9	0.074	1
17-Nov-10	PAD-1	3,3'-Dimethylbenzidine	U	1.7	0.067	1
31-Jan-11	PAD-1	3,3'-Dimethylbenzidine	U	24	0.95	12.5
05-Apr-12	PAD-1	3,3'-Dimethylbenzidine	U	1.1	0.53	1
09-Apr-13	PAD-1	3,3'-Dimethylbenzidine	U	1	0.52	1
31-Jul-14	PAD-1	3,3'-Dimethylbenzidine	U	1	0.51	1
08-Jan-08	PAD-2	3,3'-Dimethylbenzidine	U	1.9	0.075	1
24-Nov-08	PAD-2	3,3'-Dimethylbenzidine	U	1.8	0.071	1
28-Jan-09	PAD-2	3,3'-Dimethylbenzidine	U	7.6	0.3	4
09-Dec-09	PAD-2	3,3'-Dimethylbenzidine	U	1.9	0.076	1
02-Mar-10	PAD-2	3,3'-Dimethylbenzidine	U	1.9	0.075	1
17-Nov-10	PAD-2	3,3'-Dimethylbenzidine	U	1.9	0.073	1
31-Jan-11	PAD-2	3,3'-Dimethylbenzidine	U	1.9	0.073	1
05-Apr-12	PAD-2	3,3'-Dimethylbenzidine	U	1.1	0.55	1
09-Apr-13	PAD-2	3,3'-Dimethylbenzidine	U	1.1	0.56	1
31-Jul-14	PAD-2	3,3'-Dimethylbenzidine	U	1	0.51	1
07-Jan-08	PAD-3	3,3'-Dimethylbenzidine	U	1.9	0.074	1
24-Nov-08	PAD-3	3,3'-Dimethylbenzidine	U	1.8	0.069	1
28-Jan-09	PAD-3	3,3'-Dimethylbenzidine	U	1.9	0.076	1
09-Dec-09	PAD-3	3,3'-Dimethylbenzidine	U	1.9	0.074	1
02-Mar-10	PAD-3	3,3'-Dimethylbenzidine	U	2	0.079	1
17-Nov-10	PAD-3	3,3'-Dimethylbenzidine	U	1.8	0.069	1
31-Jan-11	PAD-3	3,3'-Dimethylbenzidine	U	3.9	0.15	2

Summary of 3,3-Dimethylbenzidine Results - OBG Annual Soil Monitoring - RFAAP, Radford VA

Sample Date	SampleID	Analyte	Lab Result (mg/kg)	LOQ	LOD	Dilution Factor
05-Apr-12	PAD-3	3,3'-Dimethylbenzidine	U	1.2	0.6	1
09-Apr-13	PAD-3	3,3'-Dimethylbenzidine	U	5.4	2.7	5
31-Jul-14	PAD-3	3,3'-Dimethylbenzidine	U	10	5.2	10
08-Jan-08	PAD-4	3,3'-Dimethylbenzidine	U	1.8	0.072	1
24-Nov-08	PAD-4	3,3'-Dimethylbenzidine	U	1.9	0.073	1
28-Jan-09	PAD-4	3,3'-Dimethylbenzidine	U	13	0.5	6.66
09-Dec-09	PAD-4	3,3'-Dimethylbenzidine	U	1.9	0.076	1
02-Mar-10	PAD-4	3,3'-Dimethylbenzidine	U	7.9	0.31	4
17-Nov-10	PAD-4	3,3'-Dimethylbenzidine	U	1.9	0.073	1
31-Jan-11	PAD-4	3,3'-Dimethylbenzidine	U	3.8	0.15	2
05-Apr-12	PAD-4	3,3'-Dimethylbenzidine	U	1.1	0.56	1
09-Apr-13	PAD-4	3,3'-Dimethylbenzidine	U	5.8	2.9	5
31-Jul-14	PAD-4	3,3'-Dimethylbenzidine	U	5.5	2.8	5
07-Jan-08	PAD-5	3,3'-Dimethylbenzidine	U	1.9	0.075	1
24-Nov-08	PAD-5	3,3'-Dimethylbenzidine	U	7	0.28	4
28-Jan-09	PAD-5	3,3'-Dimethylbenzidine	U	2	0.078	1
09-Dec-09	PAD-5	3,3'-Dimethylbenzidine	U	1.9	0.074	1
02-Mar-10	PAD-5	3,3'-Dimethylbenzidine	U	1.9	0.075	1
17-Nov-10	PAD-5	3,3'-Dimethylbenzidine	U	1.9	0.074	1
01-Feb-11	PAD-5	3,3'-Dimethylbenzidine	U	1.8	0.07	1
10-Apr-12	PAD-5	3,3'-Dimethylbenzidine	U	1.2	0.58	1
09-Apr-13	PAD-5	3,3'-Dimethylbenzidine	U	1.2	0.53	1
31-Jul-14	PAD-5	3,3'-Dimethylbenzidine	U	1	0.51	1
07-Jan-08	PAD-6	3,3'-Dimethylbenzidine	U	1.8	0.073	1
24-Nov-08	PAD-6	3,3'-Dimethylbenzidine	U	12	0.46	6.66
28-Jan-09	PAD-6	3,3'-Dimethylbenzidine	U	7.5	0.3	4
09-Dec-09	PAD-6	3,3'-Dimethylbenzidine	U	7.3	0.29	4
02-Mar-10	PAD-6	3,3'-Dimethylbenzidine	U	9	0.35	5
17-Nov-10	PAD-6	3,3'-Dimethylbenzidine	U	1.8	0.072	1
01-Feb-11	PAD-6	3,3'-Dimethylbenzidine	U	46	1.8	25
05-Apr-12	PAD-6	3,3'-Dimethylbenzidine	U	1.1	0.57	1
09-Apr-13	PAD-6	3,3'-Dimethylbenzidine	U	5.5	2.8	5
31-Jul-14	PAD-6	3,3'-Dimethylbenzidine	U	11	5.3	10
07-Jan-08	PAD-7	3,3'-Dimethylbenzidine	U	3.6	0.14	2
24-Nov-08	PAD-7	3,3'-Dimethylbenzidine	U	1.8	0.069	1
28-Jan-09	PAD-7	3,3'-Dimethylbenzidine	U	1.8	0.072	1
09-Dec-09	PAD-7	3,3'-Dimethylbenzidine	U	1.9	0.074	1
02-Mar-10	PAD-7	3,3'-Dimethylbenzidine	U	1.9	0.073	1
18-Nov-10	PAD-7	3,3'-Dimethylbenzidine	U	1.8	0.071	1
01-Feb-11	PAD-7	3,3'-Dimethylbenzidine	U	1.8	0.072	1
05-Apr-12	PAD-7	3,3'-Dimethylbenzidine	U	1.1	0.55	1
09-Apr-13	PAD-7	3,3'-Dimethylbenzidine	U	1.1	0.53	1
31-Jul-14	PAD-7	3,3'-Dimethylbenzidine	U	1	0.52	1
07-Jan-08	PAD-8	3,3'-Dimethylbenzidine	U	1.9	0.073	1
24-Nov-08	PAD-8	3,3'-Dimethylbenzidine	U	1.8	0.072	1
28-Jan-09	PAD-8	3,3'-Dimethylbenzidine	U	2	0.077	1
09-Dec-09	PAD-8	3,3'-Dimethylbenzidine	U	1.9	0.074	1
02-Mar-10	PAD-8	3,3'-Dimethylbenzidine	U	1.9	0.076	1

Summary of 3,3-Dimethylbenzidine Results - OBG Annual Soil Monitoring - RFAAP, Radford VA

Sample Date	SampleID	Analyte	Lab Result (mg/kg)	LOQ	LOD	Dilution Factor
17-Nov-10	PAD-8	3,3'-Dimethylbenzidine	U	1.9	0.073	1
01-Feb-11	PAD-8	3,3'-Dimethylbenzidine	U	3.7	0.15	2
05-Apr-12	PAD-8	3,3'-Dimethylbenzidine	U	1.2	0.58	1
09-Apr-13	PAD-8	3,3'-Dimethylbenzidine	U	1.1	0.53	1
31-Jul-14	PAD-8	3,3'-Dimethylbenzidine	U	1	0.51	1
07-Jan-08	PAD-X	3,3'-Dimethylbenzidine	U	1.8	0.072	1
24-Nov-08	PAD-X	3,3'-Dimethylbenzidine	U	1.8	0.07	1
28-Jan-09	PAD-X	3,3'-Dimethylbenzidine	U	1.9	0.073	1
09-Dec-09	PAD-X	3,3'-Dimethylbenzidine	U	1.8	0.072	1
02-Mar-10	PAD-X	3,3'-Dimethylbenzidine	U	36	1.4	20
18-Nov-10	PAD-X	3,3'-Dimethylbenzidine	U	1.9	0.073	1
31-Jan-11	PAD-X	3,3'-Dimethylbenzidine	U	1.8	0.072	1
05-Apr-12	PAD-X	3,3'-Dimethylbenzidine	U	1.1	0.56	1
09-Apr-13	PAD-X	3,3'-Dimethylbenzidine	U	1.1	0.54	1
31-Jul-14	PAD-X	3,3'-Dimethylbenzidine	U	1.1	0.53	1
08-Jan-08	POND-1	3,3'-Dimethylbenzidine	U	1.9	0.074	1
19-Nov-08	POND-1	3,3'-Dimethylbenzidine	U	2	0.077	1
28-Jan-09	POND-1	3,3'-Dimethylbenzidine	U	2	0.08	1
09-Dec-09	POND-1	3,3'-Dimethylbenzidine	U	2	0.079	1
02-Mar-10	POND-1	3,3'-Dimethylbenzidine	U	2.2	0.087	1
17-Nov-10	POND-1	3,3'-Dimethylbenzidine	U	2	0.078	1
31-Jan-11	POND-1	3,3'-Dimethylbenzidine	U	2	0.077	1
08-Jan-08	SB-1	3,3'-Dimethylbenzidine	U	2.1	0.082	1
19-Nov-08	SB-1	3,3'-Dimethylbenzidine	U	2.4	0.093	1
28-Jan-09	SB-1	3,3'-Dimethylbenzidine	U	2.1	0.084	1
09-Dec-09	SB-1	3,3'-Dimethylbenzidine	U	2.3	0.09	1
02-Mar-10	SB-1	3,3'-Dimethylbenzidine	U	2.4	0.096	1
18-Nov-10	SB-1	3,3'-Dimethylbenzidine	U	2.2	0.086	1
31-Jan-11	SB-1	3,3'-Dimethylbenzidine	U	1.9	0.075	1
08-Jan-08	SB-2	3,3'-Dimethylbenzidine	U	2.2	0.089	1
19-Nov-08	SB-2	3,3'-Dimethylbenzidine	U	2	0.078	1
28-Jan-09	SB-2	3,3'-Dimethylbenzidine	U	2.2	0.085	1
09-Dec-09	SB-2	3,3'-Dimethylbenzidine	U	2	0.077	1
02-Mar-10	SB-2	3,3'-Dimethylbenzidine	U	2.5	0.099	1
18-Nov-10	SB-2	3,3'-Dimethylbenzidine	U	2.2	0.088	1
31-Jan-11	SB-2	3,3'-Dimethylbenzidine	U	2.3	0.092	1

Notes	
U	Denotes not detected at or above LOD.
PAD-X	Denotes blind field duplicate for PAD-7
LOD	Denotes laboratory limit of detection. Result reported on a dry weight basis and adjusted for sample dilution, where applicable.
LOQ	Denotes laboratory limit of quantitation. Result reported on a dry weight basis and adjusted for sample dilution, where applicable.

Appendix B

Appendix B: ProUCL OBG Risk Assessment Soil Data Input

	A	B	C	D	E	F	G	H	I	J
1	Arsenic	D_Arsenic	Chromium, total	D_Chromium, total	Chromium, hexavalent	D_Chromium, hexavalent	Diphenylamine	D_Diphenylamine	Perchlorate	D_Perchlorate
2	1.8	1	14	1	0.28	0	0.12	1	0.00102	0
3	1.6	1	15	1	0.74	1	0.2	1	0.00102	0
4	1.3	1	12	1	0.3	0	0.17	1	0.00491	1
5	1.4	1	13	1	0.28	0	0.073	1	0.00756	1
6	2.2	1	35	1	1.6	1	0.034	0	0.00621	1
7	2	1	16	1	0.29	0	0.56	1	0.00181	1
8	1.6	1	13	1	0.28	0	0.038	1	0.00101	0
9	0.88	1	30	1			1.7	1		
10	1.9	1	13	1			0.17	1		
11	1.4	1	13	1			0.074	1		
12	1.7	1	13	1			0.098	1		
13	2.1	1	19	1			0.043	0		
14	2.2	1	21	1			0.079	1		
15										
16										
17										
18										

Appendix B: ProUCL OBG Risk Assessment Soil Data Input

	K	L	M	N	O	P	Q	R	S
1	2,4-Dinitrotoluene	D_2,4-Dinitrotoluene	2,6_Dinitrotoluene	D_2,6_Dinitrotoluene	2,4,6_Trinitrotoluene	D_2,4,6_Trinitrotoluene	HMX	D_HMX	RDX
2	0.083	0	0.418	1	0.083	0	*0.09995*	0	0.101
3	0.0986	0	0.104	0	0.131	1	0.0986	0	0.104
4	0.0989	0	0.0986	0	0.0989	0	0.224	1	5.28
5	0.249	1	0.102	0	0.101	0	0.101	0	0.102
6	0.104	0	0.0966	0	0.104	0	0.104	0	0.0966
7	3.18	1	0.0973	0	0.0986	0	0.836	1	0.0973
8	0.433	1	0.0996	0	0.102	0	0.102	0	0.0996
9	0.0966	0			0.0966	0	0.0966	0	
10	0.0973	0			0.0973	0	0.0973	0	
11	0.0996	0			0.0996	0	0.0996	0	
12	2.28	1			0.327	1	0.101	0	
13	0.0964	0			0.0964	0	0.0964	0	
14	0.103	0			0.527	1	0.103	0	
15									
16									
17									
18									

Appendix B: ProUCL OBG Risk Assessment Soil Data Input

	T	U	V	W	X	Y	Z	AA	AB	AC	AD
1	D_RDX	Nitroglycerin	D_Nitroglycerin	Mercury	D_Mercury	Diethyl phthalate	D_Diethyl phthalate	Dimethyl phthalate	D_Dimethyl phthalate	Fluoranthene	D_Fluoranthene
2	0	14	1	0.016	0	0.068	0	0.068	0	0.003	0
3	0	1.98	1	0.016	0	1.2	1	0.33	1	0.005	1
4	1	0.741	1	0.017	0	0.65	1	0.075	0	0.029	1
5	0	23.1	1	0.027	1	0.068	0	0.068	0	0.006	1
6	0	9.17	1	0.019	1	0.068	0	0.068	0	0.076	1
7	0	17.5	1	0.016	0	0.42	1	*0.07356*	0	0.005	1
8	0	11.1	1	0.015	0	0.068	0	0.068	0	0.004	1
9		53.1	1			0.78	1	*0.07356*	0		
10		20.2	1			0.17	1	0.07	0		
11		13.2	1			0.067	0	0.15	1		
12		8.66	1			0.36	1	0.069	0		
13		0.0964	0			0.086	0	0.086	0		
14		0.103	0			0.51	1	0.09	0		
15		29	1								
16		29.6	1								
17		9.64	1								
18		2.69	1								

Appendix B: ProUCL OBG Risk Assessment Soil Data Input

	AE	AF	AG	AH	AI	AJ	AK	AL	AM
1	Naphthalene	D_Naphthalene	Benzo(a)anthracene	D_Benzo(a)anthracene	bis(2-Ethylhexyl)phthalate	D_bis(2-Ethylhexyl)phthalate	Di-n-butyl phthalate	D_Di-n-butyl phthalate	Lead
2	0.003	0	0.003	0	0.082	1	2.1	1	120
3	0.003	0	0.005	1	0.7	1	0.99	1	240
4	0.034	1	0.027	1	0.34	1	0.54	1	210
5	0.005	1	0.003	0	0.31	1	0.32	1	38
6	*0.003*	0	*0.003*	0	0.068	0	0.12	1	160
7	0.007	1	0.003	0	*0.0713*	0	1.1	1	270
8	0.003	0	0.003	0	0.068	0	0.19	1	150
9					*0.0713*	0	20	1	610
10					0.07	0	0.48	1	81
11					0.067	0	0.43	1	110
12					0.069	0	0.4	1	86
13					0.086	0	0.086	0	54
14					0.47	1	2.4	1	120
15									
16									
17									
18									

Appendix B: ProUCL OBG Risk Assessment Soil Data Input

	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
1	D_Lead	Selenium	D_Selenium	Barium	D_Barium	Silver	D_Silver	Cadmium	D_Cadmium	Dioxin/Furan	D_Dioxin/Furan
2	1	0.42	0	81	1	0.11	1	0.16	1	1.5	1
3	1	0.47	0	110	1	0.29	1	0.43	1	6.35	1
4	1	0.52	0	100	1	0.15	1	0.2	1	3.18	1
5	1	0.41	0	89	1	0.11	1	0.12	1	0.43	1
6	1	0.46	0	120	1	0.098	0	0.23	1	1.71	1
7	1	0.46	0	140	1	0.096	0	0.27	1	10.07	1
8	1	0.41	1	140	1	0.11	1	0.11	1	1.44	1
9	1	0.44	0	92	1			0.16	1	2.61	1
10	1	0.43	0	100	1			0.11	1	1.7	1
11	1	0.42	0	80	1			0.059	1	0.49	1
12	1	0.4	0	92	1			0.14	1	1.9	1
13	1	0.52	0	100	1			0.23	1	1.82	1
14	1	0.58	0	120	1			0.39	1	5.12	1
15											
16											
17											
18											

Appendix C

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation	9/3/2015 10:30:33 AM										
5	From File	APPENDIX Input Data OBG Risk Assessment Final Modified for ProUCL_a.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10	Diphenylamine											
11												
12	General Statistics											
13	Total Number of Observations	13				Number of Distinct Observations	12					
14	Number of Detects	11				Number of Non-Detects	2					
15	Number of Distinct Detects	10				Number of Distinct Non-Detects	2					
16	Minimum Detect	0.038				Minimum Non-Detect	0.034					
17	Maximum Detect	1.7				Maximum Non-Detect	0.043					
18	Variance Detects	0.236				Percent Non-Detects	15.38%					
19	Mean Detects	0.298				SD Detects	0.486					
20	Median Detects	0.12				CV Detects	1.63					
21	Skewness Detects	2.872				Kurtosis Detects	8.553					
22	Mean of Logged Detects	-1.88				SD of Logged Detects	1.062					
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic	0.548				Shapiro Wilk GOF Test						
26	5% Shapiro Wilk Critical Value	0.85				Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic	0.398				Lilliefors GOF Test						
28	5% Lilliefors Critical Value	0.267				Detected Data Not Normal at 5% Significance Level						
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	Mean	0.258				Standard Error of Mean	0.127					
33	SD	0.437				95% KM (BCA) UCL	0.518					
34	95% KM (t) UCL	0.484				95% KM (Percentile Bootstrap) UCL	0.474					
35	95% KM (z) UCL	0.467				95% KM Bootstrap t UCL	1.571					
36	90% KM Chebyshev UCL	0.639				95% KM Chebyshev UCL	0.812					
37	97.5% KM Chebyshev UCL	1.052				99% KM Chebyshev UCL	1.523					
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic	1.099				Anderson-Darling GOF Test						
41	5% A-D Critical Value	0.757				Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic	0.311				Kolmogrov-Smirnoff GOF						
43	5% K-S Critical Value	0.264				Detected Data Not Gamma Distributed at 5% Significance Level						
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)	0.875				k star (bias corrected MLE)	0.697					
48	Theta hat (MLE)	0.341				Theta star (bias corrected MLE)	0.428					
49	nu hat (MLE)	19.26				nu star (bias corrected)	15.34					
50	MLE Mean (bias corrected)	0.298				MLE Sd (bias corrected)	0.357					
51												
52	Gamma Kaplan-Meier (KM) Statistics											
53	k hat (KM)	0.348				nu hat (KM)	9.054					

54	Approximate Chi Square Value (9.05, α)				3.359	Adjusted Chi Square Value (9.05, β)						2.883
55	95% Gamma Approximate KM-UCL (use when n>=50)				0.695	95% Gamma Adjusted KM-UCL (use when n<50)						0.81
56												
57	Gamma ROS Statistics using Imputed Non-Detects											
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
59	GROS may not be used when kstar of detected data is small such as < 0.1											
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
61	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
62	Minimum				0.01	Mean						0.254
63	Maximum				1.7	Median						0.098
64	SD				0.457	CV						1.799
65	k hat (MLE)				0.657	k star (bias corrected MLE)						0.557
66	Theta hat (MLE)				0.387	Theta star (bias corrected MLE)						0.456
67	nu hat (MLE)				17.08	nu star (bias corrected)						14.47
68	MLE Mean (bias corrected)				0.254	MLE Sd (bias corrected)						0.34
69						Adjusted Level of Significance (β)						0.0301
70	Approximate Chi Square Value (14.47, α)				6.894	Adjusted Chi Square Value (14.47, β)						6.163
71	95% Gamma Approximate UCL (use when n>=50)				0.533	95% Gamma Adjusted UCL (use when n<50)						0.596
72												
73	Lognormal GOF Test on Detected Observations Only											
74	Shapiro Wilk Test Statistic				0.894	Shapiro Wilk GOF Test						
75	5% Shapiro Wilk Critical Value				0.85	Detected Data appear Lognormal at 5% Significance Level						
76	Lilliefors Test Statistic				0.218	Lilliefors GOF Test						
77	5% Lilliefors Critical Value				0.267	Detected Data appear Lognormal at 5% Significance Level						
78	Detected Data appear Lognormal at 5% Significance Level											
79												
80	Lognormal ROS Statistics Using Imputed Non-Detects											
81	Mean in Original Scale				0.255	Mean in Log Scale						-2.228
82	SD in Original Scale				0.456	SD in Log Scale						1.295
83	95% t UCL (assumes normality of ROS data)				0.481	95% Percentile Bootstrap UCL						0.482
84	95% BCA Bootstrap UCL				0.604	95% Bootstrap t UCL						1.416
85	95% H-UCL (Log ROS)				0.883							
86												
87	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
88	KM Mean (logged)				-2.106	95% H-UCL (KM -Log)						0.544
89	KM SD (logged)				1.073	95% Critical H Value (KM-Log)						2.976
90	KM Standard Error of Mean (logged)				0.312							
91												
92	DL/2 Statistics											
93	DL/2 Normal					DL/2 Log-Transformed						
94	Mean in Original Scale				0.255	Mean in Log Scale						-2.199
95	SD in Original Scale				0.456	SD in Log Scale						1.246
96	95% t UCL (Assumes normality)				0.481	95% H-Stat UCL						0.787
97	DL/2 is not a recommended method, provided for comparisons and historical reasons											
98												
99	Nonparametric Distribution Free UCL Statistics											
100	Detected Data appear Lognormal Distributed at 5% Significance Level											
101												
102	Suggested UCL to Use											
103	97.5% KM (Chebyshev) UCL				1.052							
104												
105	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
106	Recommendations are based upon data size, data distribution, and skewness.											

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Perchlorate

General Statistics

Total Number of Observations	7	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	3
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	0.00181	Minimum Non-Detect	0.00101
Maximum Detect	0.00756	Maximum Non-Detect	0.00102
Variance Detects	6.0473E-6	Percent Non-Detects	42.86%
Mean Detects	0.00512	SD Detects	0.00246
Median Detects	0.00556	CV Detects	0.48
Skewness Detects	-0.923	Kurtosis Detects	0.82
Mean of Logged Detects	-5.399	SD of Logged Detects	0.635

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.958	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.216	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00336	Standard Error of Mean	0.00113
SD	0.00259	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00556	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00522	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00676	95% KM Chebyshev UCL	0.0083
97.5% KM Chebyshev UCL	0.0104	99% KM Chebyshev UCL	0.0146

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.379	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.282	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.152	k star (bias corrected MLE)	1.205
Theta hat (MLE)	0.00123	Theta star (bias corrected MLE)	0.00425
nu hat (MLE)	33.22	nu star (bias corrected)	9.637
MLE Mean (bias corrected)	0.00512	MLE Sd (bias corrected)	0.00467

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.677	nu hat (KM)	23.47
Approximate Chi Square Value (23.47, α)	13.45	Adjusted Chi Square Value (23.47, β)	11.23

160	95% Gamma Approximate KM-UCL (use when n>=50)				0.00586	95% Gamma Adjusted KM-UCL (use when n<50)					0.00703
161												
162	Gamma ROS Statistics using Imputed Non-Detects											
163	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
164	GROS may not be used when kstar of detected data is small such as < 0.1											
165	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
166	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
167	Minimum				0.00181	Mean					0.00721	
168	Maximum				0.01	Median					0.00756	
169	SD				0.00313	CV					0.434	
170	k hat (MLE)				4.093	k star (bias corrected MLE)					2.434	
171	Theta hat (MLE)				0.00176	Theta star (bias corrected MLE)					0.00296	
172	nu hat (MLE)				57.31	nu star (bias corrected)					34.08	
173	MLE Mean (bias corrected)				0.00721	MLE Sd (bias corrected)					0.00462	
174						Adjusted Level of Significance (β)					0.0158	
175	Approximate Chi Square Value (34.08, α)				21.73	Adjusted Chi Square Value (34.08, β)					18.81	
176	95% Gamma Approximate UCL (use when n>=50)				0.0113	95% Gamma Adjusted UCL (use when n<50)					N/A	
177												
178	Lognormal GOF Test on Detected Observations Only											
179	Shapiro Wilk Test Statistic				0.863	Shapiro Wilk GOF Test						
180	5% Shapiro Wilk Critical Value				0.748	Detected Data appear Lognormal at 5% Significance Level						
181	Lilliefors Test Statistic				0.302	Lilliefors GOF Test						
182	5% Lilliefors Critical Value				0.443	Detected Data appear Lognormal at 5% Significance Level						
183	Detected Data appear Lognormal at 5% Significance Level											
184												
185	Lognormal ROS Statistics Using Imputed Non-Detects											
186	Mean in Original Scale				0.00329	Mean in Log Scale					-6.125	
187	SD in Original Scale				0.00287	SD in Log Scale					1.024	
188	95% t UCL (assumes normality of ROS data)				0.0054	95% Percentile Bootstrap UCL					0.00505	
189	95% BCA Bootstrap UCL				0.00512	95% Bootstrap t UCL					0.00562	
190	95% H-UCL (Log ROS)				0.0179							
191												
192	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
193	KM Mean (logged)				-6.042	95% H-UCL (KM -Log)					0.0107	
194	KM SD (logged)				0.85	95% Critical H Value (KM-Log)					3.286	
195	KM Standard Error of Mean (logged)				0.371							
196												
197	DL/2 Statistics											
198	DL/2 Normal					DL/2 Log-Transformed						
199	Mean in Original Scale				0.00315	Mean in Log Scale					-6.336	
200	SD in Original Scale				0.00302	SD in Log Scale					1.251	
201	95% t UCL (Assumes normality)				0.00536	95% H-Stat UCL					0.0373	
202	DL/2 is not a recommended method, provided for comparisons and historical reasons											
203												
204	Nonparametric Distribution Free UCL Statistics											
205	Detected Data appear Normal Distributed at 5% Significance Level											
206												
207	Suggested UCL to Use											
208	95% KM (t) UCL				0.00556	95% KM (Percentile Bootstrap) UCL					N/A	
209	Warning: One or more Recommended UCL(s) not available!											
210												
211	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
212	Recommendations are based upon data size, data distribution, and skewness.											

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

2,4-Dinitrotoluene

General Statistics

Total Number of Observations	13	Number of Distinct Observations	13
Number of Detects	4	Number of Non-Detects	9
Number of Distinct Detects	4	Number of Distinct Non-Detects	9
Minimum Detect	0.249	Minimum Non-Detect	0.083
Maximum Detect	3.18	Maximum Non-Detect	0.104
Variance Detects	2.043	Percent Non-Detects	69.23%
Mean Detects	1.536	SD Detects	1.429
Median Detects	1.357	CV Detects	0.931
Skewness Detects	0.317	Kurtosis Detects	-4.047
Mean of Logged Detects	-0.0616	SD of Logged Detects	1.243

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.881	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.28	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.53	Standard Error of Mean	0.307
SD	0.96	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.078	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.035	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.452	95% KM Chebyshev UCL	1.87
97.5% KM Chebyshev UCL	2.449	99% KM Chebyshev UCL	3.588

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.404	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.665	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.286	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.402	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.158	k star (bias corrected MLE)	0.456
Theta hat (MLE)	1.326	Theta star (bias corrected MLE)	3.367
nu hat (MLE)	9.262	nu star (bias corrected)	3.649
MLE Mean (bias corrected)	1.536	MLE Sd (bias corrected)	2.274

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.305	nu hat (KM)	7.928
Approximate Chi Square Value (7.93, α)	2.694	Adjusted Chi Square Value (7.93, β)	2.278
95% Gamma Approximate KM-UCL (use when n>=50)	1.56	95% Gamma Adjusted KM-UCL (use when n<50)	1.844

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

266	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
267	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
268					Minimum	0.01			Mean	0.479	
269					Maximum	3.18			Median	0.01	
270					SD	1.024			CV	2.135	
271					k hat (MLE)	0.282			k star (bias corrected MLE)	0.268	
272					Theta hat (MLE)	1.701			Theta star (bias corrected MLE)	1.788	
273					nu hat (MLE)	7.327			nu star (bias corrected)	6.97	
274					MLE Mean (bias corrected)	0.479			MLE Sd (bias corrected)	0.926	
275									Adjusted Level of Significance (β)	0.0301	
276					Approximate Chi Square Value (6.97, α)	2.154			Adjusted Chi Square Value (6.97, β)	1.793	
277					95% Gamma Approximate UCL (use when n>=50)	1.551			95% Gamma Adjusted UCL (use when n<50)	N/A	
278											
279	Lognormal GOF Test on Detected Observations Only										
280					Shapiro Wilk Test Statistic	0.888			Shapiro Wilk GOF Test		
281					5% Shapiro Wilk Critical Value	0.748			Detected Data appear Lognormal at 5% Significance Level		
282					Lilliefors Test Statistic	0.262			Lilliefors GOF Test		
283					5% Lilliefors Critical Value	0.443			Detected Data appear Lognormal at 5% Significance Level		
284	Detected Data appear Lognormal at 5% Significance Level										
285											
286	Lognormal ROS Statistics Using Imputed Non-Detects										
287					Mean in Original Scale	0.479			Mean in Log Scale	-3.297	
288					SD in Original Scale	1.024			SD in Log Scale	2.329	
289					95% t UCL (assumes normality of ROS data)	0.985			95% Percentile Bootstrap UCL	0.981	
290					95% BCA Bootstrap UCL	1.17			95% Bootstrap t UCL	3.769	
291					95% H-UCL (Log ROS)	22.78					
292											
293	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed										
294					KM Mean (logged)	-1.742			95% H-UCL (KM -Log)	1.332	
295					KM SD (logged)	1.27			95% Critical H Value (KM-Log)	3.337	
296					KM Standard Error of Mean (logged)	0.407					
297											
298	DL/2 Statistics										
299					DL/2 Normal				DL/2 Log-Transformed		
300					Mean in Original Scale	0.506			Mean in Log Scale	-2.112	
301					SD in Original Scale	1.01			SD in Log Scale	1.553	
302					95% t UCL (Assumes normality)	1.006			95% H-Stat UCL	2.306	
303	DL/2 is not a recommended method, provided for comparisons and historical reasons										
304											
305	Nonparametric Distribution Free UCL Statistics										
306	Detected Data appear Normal Distributed at 5% Significance Level										
307											
308	Suggested UCL to Use										
309					95% KM (t) UCL	1.078			95% KM (Percentile Bootstrap) UCL	N/A	
310	Warning: One or more Recommended UCL(s) not available!										
311											
312	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
313	Recommendations are based upon data size, data distribution, and skewness.										
314	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
315	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
316											
317	2,6_Dinitrotoluene										
318											

	A	B	C	D	E	F	G	H	I	J	K	L
319	General Statistics											
320	Total Number of Observations					7	Number of Distinct Observations					7
321	Number of Detects					1	Number of Non-Detects					6
322	Number of Distinct Detects					1	Number of Distinct Non-Detects					6
323												
324	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
325	s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT											
326												
327	The data set for variable 2,6_Dinitrotoluene was not processed!											
328												
329												
330	2,4,6_Trinitrotoluene											
331												
332	General Statistics											
333	Total Number of Observations					13	Number of Distinct Observations					13
334	Number of Detects					3	Number of Non-Detects					10
335	Number of Distinct Detects					3	Number of Distinct Non-Detects					10
336	Minimum Detect					0.131	Minimum Non-Detect					0.083
337	Maximum Detect					0.527	Maximum Non-Detect					0.104
338	Variance Detects					0.0392	Percent Non-Detects					76.92%
339	Mean Detects					0.328	SD Detects					0.198
340	Median Detects					0.327	CV Detects					0.603
341	Skewness Detects					0.0303	Kurtosis Detects					N/A
342	Mean of Logged Detects					-1.264	SD of Logged Detects					0.707
343												
344	Warning: Data set has only 3 Detected Values.											
345	This is not enough to compute meaningful or reliable statistics and estimates.											
346												
347												
348	Normal GOF Test on Detects Only											
349	Shapiro Wilk Test Statistic					1	Shapiro Wilk GOF Test					
350	5% Shapiro Wilk Critical Value					0.767	Detected Data appear Normal at 5% Significance Level					
351	Lilliefors Test Statistic					0.175	Lilliefors GOF Test					
352	5% Lilliefors Critical Value					0.512	Detected Data appear Normal at 5% Significance Level					
353	Detected Data appear Normal at 5% Significance Level											
354												
355	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
356	Mean					0.14	Standard Error of Mean					0.0439
357	SD					0.129	95% KM (BCA) UCL					N/A
358	95% KM (t) UCL					0.218	95% KM (Percentile Bootstrap) UCL					N/A
359	95% KM (z) UCL					0.212	95% KM Bootstrap t UCL					N/A
360	90% KM Chebyshev UCL					0.271	95% KM Chebyshev UCL					0.331
361	97.5% KM Chebyshev UCL					0.414	99% KM Chebyshev UCL					0.577
362												
363	Gamma GOF Tests on Detected Observations Only											
364	Not Enough Data to Perform GOF Test											
365												
366	Gamma Statistics on Detected Data Only											
367	k hat (MLE)					3.493	k star (bias corrected MLE)					N/A
368	Theta hat (MLE)					0.094	Theta star (bias corrected MLE)					N/A
369	nu hat (MLE)					20.96	nu star (bias corrected)					N/A
370	MLE Mean (bias corrected)					N/A	MLE Sd (bias corrected)					N/A
371												

	A	B	C	D	E	F	G	H	I	J	K	L
372	Gamma Kaplan-Meier (KM) Statistics											
373					k hat (KM)	1.166			nu hat (KM)			30.32
374									Adjusted Level of Significance (β)			0.0301
375					Approximate Chi Square Value (30.32, α)	18.74			Adjusted Chi Square Value (30.32, β)			17.46
376					95% Gamma Approximate KM-UCL (use when n>=50)	0.226			95% Gamma Adjusted KM-UCL (use when n<50)			0.242
377												
378	Lognormal GOF Test on Detected Observations Only											
379					Shapiro Wilk Test Statistic	0.968			Shapiro Wilk GOF Test			
380					5% Shapiro Wilk Critical Value	0.767			Detected Data appear Lognormal at 5% Significance Level			
381					Lilliefors Test Statistic	0.248			Lilliefors GOF Test			
382					5% Lilliefors Critical Value	0.512			Detected Data appear Lognormal at 5% Significance Level			
383	Detected Data appear Lognormal at 5% Significance Level											
384												
385	Lognormal ROS Statistics Using Imputed Non-Detects											
386					Mean in Original Scale	0.0841			Mean in Log Scale			-3.776
387					SD in Original Scale	0.161			SD in Log Scale			1.461
388					95% t UCL (assumes normality of ROS data)	0.164			95% Percentile Bootstrap UCL			N/A
389					95% BCA Bootstrap UCL	N/A			95% Bootstrap t UCL			N/A
390					95% H-UCL (Log ROS)	0.318						
391												
392	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
393					KM Mean (logged)	-2.206			95% H-UCL (KM -Log)			0.19
394					KM SD (logged)	0.586			95% Critical H Value (KM-Log)			2.217
395					KM Standard Error of Mean (logged)	0.199						
396												
397	DL/2 Statistics											
398				DL/2 Normal					DL/2 Log-Transformed			
399					Mean in Original Scale	0.113			Mean in Log Scale			-2.615
400					SD in Original Scale	0.147			SD in Log Scale			0.824
401					95% t UCL (Assumes normality)	0.186			95% H-Stat UCL			0.189
402	DL/2 is not a recommended method, provided for comparisons and historical reasons											
403												
404	Nonparametric Distribution Free UCL Statistics											
405	Detected Data appear Normal Distributed at 5% Significance Level											
406												
407	Suggested UCL to Use											
408					95% KM (t) UCL	0.218			95% KM (Percentile Bootstrap) UCL			N/A
409	Warning: One or more Recommended UCL(s) not available!											
410												
411	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
412	Recommendations are based upon data size, data distribution, and skewness.											
413	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
414	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
415												
416	HMX											
417												
418	General Statistics											
419					Total Number of Observations	13			Number of Distinct Observations			12
420					Number of Detects	2			Number of Non-Detects			11
421					Number of Distinct Detects	2			Number of Distinct Non-Detects			10
422					Minimum Detect	0.224			Minimum Non-Detect			0.0964
423					Maximum Detect	0.836			Maximum Non-Detect			0.104
424					Variance Detects	0.187			Percent Non-Detects			84.62%

425				Mean Detects	0.53				SD Detects	0.433	
426				Median Detects	0.53				CV Detects	0.817	
427				Skewness Detects	N/A				Kurtosis Detects	N/A	
428				Mean of Logged Detects	-0.838				SD of Logged Detects	0.931	
429											
430				Warning: Data set has only 2 Detected Values.							
431				This is not enough to compute meaningful or reliable statistics and estimates.							
432											
433											
434				Normal GOF Test on Detects Only							
435				Not Enough Data to Perform GOF Test							
436											
437				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
438				Mean	0.163				Standard Error of Mean	0.0773	
439				SD	0.197				95% KM (BCA) UCL	N/A	
440				95% KM (t) UCL	0.301				95% KM (Percentile Bootstrap) UCL	N/A	
441				95% KM (z) UCL	0.29				95% KM Bootstrap t UCL	N/A	
442				90% KM Chebyshev UCL	0.395				95% KM Chebyshev UCL	0.5	
443				97.5% KM Chebyshev UCL	0.646				99% KM Chebyshev UCL	0.933	
444											
445				Gamma GOF Tests on Detected Observations Only							
446				Not Enough Data to Perform GOF Test							
447											
448				Gamma Statistics on Detected Data Only							
449				k hat (MLE)	2.621				k star (bias corrected MLE)	N/A	
450				Theta hat (MLE)	0.202				Theta star (bias corrected MLE)	N/A	
451				nu hat (MLE)	10.48				nu star (bias corrected)	N/A	
452				MLE Mean (bias corrected)	N/A				MLE Sd (bias corrected)	N/A	
453											
454				Gamma Kaplan-Meier (KM) Statistics							
455				k hat (KM)	0.684				nu hat (KM)	17.79	
456									Adjusted Level of Significance (β)	0.0301	
457				Approximate Chi Square Value (17.79, α)	9.24				Adjusted Chi Square Value (17.79, β)	8.374	
458				95% Gamma Approximate KM-UCL (use when n>=50)	0.314				95% Gamma Adjusted KM-UCL (use when n<50)	0.347	
459											
460				Lognormal GOF Test on Detected Observations Only							
461				Not Enough Data to Perform GOF Test							
462											
463				Lognormal ROS Statistics Using Imputed Non-Detects							
464				Mean in Original Scale	0.0827				Mean in Log Scale	-5.857	
465				SD in Original Scale	0.235				SD in Log Scale	2.309	
466				95% t UCL (assumes normality of ROS data)	0.199				95% Percentile Bootstrap UCL	0.198	
467				95% BCA Bootstrap UCL	0.275				95% Bootstrap t UCL	21.58	
468				95% H-UCL (Log ROS)	1.579						
469											
470				DL/2 Statistics							
471				DL/2 Normal					DL/2 Log-Transformed		
472				Mean in Original Scale	0.124				Mean in Log Scale	-2.664	
473				SD in Original Scale	0.219				SD in Log Scale	0.854	
474				95% t UCL (Assumes normality)	0.232				95% H-Stat UCL	0.191	
475				DL/2 is not a recommended method, provided for comparisons and historical reasons							
476											
477				Nonparametric Distribution Free UCL Statistics							

478	Data do not follow a Discernible Distribution at 5% Significance Level										
479											
480	Suggested UCL to Use										
481				95% KM (t) UCL	0.301			95% KM (% Bootstrap) UCL	N/A		
482	Warning: One or more Recommended UCL(s) not available!										
483											
484	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
485	Recommendations are based upon data size, data distribution, and skewness.										
486	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
487	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
488											
489	RDX										
490											
491	General Statistics										
492				Total Number of Observations	7			Number of Distinct Observations	7		
493				Number of Detects	1			Number of Non-Detects	6		
494				Number of Distinct Detects	1			Number of Distinct Non-Detects	6		
495											
496	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
497	s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT										
498											
499	The data set for variable RDX was not processed!										
500											
501											
502	Nitroglycerin										
503											
504	General Statistics										
505				Total Number of Observations	17			Number of Distinct Observations	17		
506				Number of Detects	15			Number of Non-Detects	2		
507				Number of Distinct Detects	15			Number of Distinct Non-Detects	2		
508				Minimum Detect	0.741			Minimum Non-Detect	0.0964		
509				Maximum Detect	53.1			Maximum Non-Detect	0.103		
510				Variance Detects	184.5			Percent Non-Detects	11.76%		
511				Mean Detects	16.25			SD Detects	13.58		
512				Median Detects	13.2			CV Detects	0.836		
513				Skewness Detects	1.464			Kurtosis Detects	2.839		
514				Mean of Logged Detects	2.358			SD of Logged Detects	1.131		
515											
516	Normal GOF Test on Detects Only										
517				Shapiro Wilk Test Statistic	0.88			Shapiro Wilk GOF Test			
518				5% Shapiro Wilk Critical Value	0.881			Detected Data Not Normal at 5% Significance Level			
519				Lilliefors Test Statistic	0.166			Lilliefors GOF Test			
520				5% Lilliefors Critical Value	0.229			Detected Data appear Normal at 5% Significance Level			
521	Detected Data appear Approximate Normal at 5% Significance Level										
522											
523	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
524				Mean	14.35			Standard Error of Mean	3.359		
525				SD	13.38			95% KM (BCA) UCL	19.94		
526				95% KM (t) UCL	20.21			95% KM (Percentile Bootstrap) UCL	20.09		
527				95% KM (z) UCL	19.87			95% KM Bootstrap t UCL	22.16		
528				90% KM Chebyshev UCL	24.42			95% KM Chebyshev UCL	28.99		
529				97.5% KM Chebyshev UCL	35.32			99% KM Chebyshev UCL	47.77		
530											

	A	B	C	D	E	F	G	H	I	J	K	L
531	Gamma GOF Tests on Detected Observations Only											
532					A-D Test Statistic	0.262	Anderson-Darling GOF Test					
533					5% A-D Critical Value	0.757	Detected data appear Gamma Distributed at 5% Significance Level					
534					K-S Test Statistic	0.165	Kolmogrov-Smirnoff GOF					
535					5% K-S Critical Value	0.226	Detected data appear Gamma Distributed at 5% Significance Level					
536	Detected data appear Gamma Distributed at 5% Significance Level											
537												
538	Gamma Statistics on Detected Data Only											
539					k hat (MLE)	1.306	k star (bias corrected MLE)					1.089
540					Theta hat (MLE)	12.44	Theta star (bias corrected MLE)					14.92
541					nu hat (MLE)	39.17	nu star (bias corrected)					32.67
542					MLE Mean (bias corrected)	16.25	MLE Sd (bias corrected)					15.57
543												
544	Gamma Kaplan-Meier (KM) Statistics											
545					k hat (KM)	1.15	nu hat (KM)					39.08
546					Approximate Chi Square Value (39.08, α)	25.76	Adjusted Chi Square Value (39.08, β)					24.63
547					95% Gamma Approximate KM-UCL (use when n>=50)	21.76	95% Gamma Adjusted KM-UCL (use when n<50)					22.76
548												
549	Gamma ROS Statistics using Imputed Non-Detects											
550	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
551	GROS may not be used when kstar of detected data is small such as < 0.1											
552	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
553	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
554					Minimum	0.01	Mean					14.34
555					Maximum	53.1	Median					11.1
556					SD	13.8	CV					0.963
557					k hat (MLE)	0.556	k star (bias corrected MLE)					0.497
558					Theta hat (MLE)	25.78	Theta star (bias corrected MLE)					28.83
559					nu hat (MLE)	18.91	nu star (bias corrected)					16.91
560					MLE Mean (bias corrected)	14.34	MLE Sd (bias corrected)					20.33
561							Adjusted Level of Significance (β)					0.0346
562					Approximate Chi Square Value (16.91, α)	8.605	Adjusted Chi Square Value (16.91, β)					7.989
563					95% Gamma Approximate UCL (use when n>=50)	28.16	95% Gamma Adjusted UCL (use when n<50)					30.33
564												
565	Lognormal GOF Test on Detected Observations Only											
566					Shapiro Wilk Test Statistic	0.912	Shapiro Wilk GOF Test					
567					5% Shapiro Wilk Critical Value	0.881	Detected Data appear Lognormal at 5% Significance Level					
568					Lilliefors Test Statistic	0.23	Lilliefors GOF Test					
569					5% Lilliefors Critical Value	0.229	Detected Data Not Lognormal at 5% Significance Level					
570	Detected Data appear Approximate Lognormal at 5% Significance Level											
571												
572	Lognormal ROS Statistics Using Imputed Non-Detects											
573					Mean in Original Scale	14.44	Mean in Log Scale					2.067
574					SD in Original Scale	13.69	SD in Log Scale					1.34
575					95% t UCL (assumes normality of ROS data)	20.24	95% Percentile Bootstrap UCL					20.18
576					95% BCA Bootstrap UCL	21.31	95% Bootstrap t UCL					22.36
577					95% H-UCL (Log ROS)	56.89						
578												
579	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
580					KM Mean (logged)	1.806	95% H-UCL (KM -Log)					208.4
581					KM SD (logged)	1.829	95% Critical H Value (KM-Log)					4.072
582					KM Standard Error of Mean (logged)	0.459						
583												

584	DL/2 Statistics										
585	DL/2 Normal					DL/2 Log-Transformed					
586				Mean in Original Scale	14.34				Mean in Log Scale	1.728	
587				SD in Original Scale	13.8				SD in Log Scale	2.07	
588				95% t UCL (Assumes normality)	20.18				95% H-Stat UCL	496.9	
589	DL/2 is not a recommended method, provided for comparisons and historical reasons										
590											
591	Nonparametric Distribution Free UCL Statistics										
592	Detected Data appear Approximate Normal Distributed at 5% Significance Level										
593											
594	Suggested UCL to Use										
595				95% KM (t) UCL	20.21				95% KM (Percentile Bootstrap) UCL	20.09	
596											
597	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
598	Recommendations are based upon data size, data distribution, and skewness.										
599	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
600	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
601											
602	Mercury										
603											
604	General Statistics										
605				Total Number of Observations	7				Number of Distinct Observations	5	
606				Number of Detects	2				Number of Non-Detects	5	
607				Number of Distinct Detects	2				Number of Distinct Non-Detects	3	
608				Minimum Detect	0.019				Minimum Non-Detect	0.015	
609				Maximum Detect	0.027				Maximum Non-Detect	0.017	
610				Variance Detects	3.2000E-5				Percent Non-Detects	71.43%	
611				Mean Detects	0.023				SD Detects	0.00566	
612				Median Detects	0.023				CV Detects	0.246	
613				Skewness Detects	N/A				Kurtosis Detects	N/A	
614				Mean of Logged Detects	-3.788				SD of Logged Detects	0.248	
615											
616	Warning: Data set has only 2 Detected Values.										
617	This is not enough to compute meaningful or reliable statistics and estimates.										
618											
619											
620	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use										
621	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.										
622	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).										
623	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0										
624											
625	Normal GOF Test on Detects Only										
626	Not Enough Data to Perform GOF Test										
627											
628	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
629				Mean	0.0173				Standard Error of Mean	0.00224	
630				SD	0.0042				95% KM (BCA) UCL	N/A	
631				95% KM (t) UCL	0.0216				95% KM (Percentile Bootstrap) UCL	N/A	
632				95% KM (z) UCL	0.021				95% KM Bootstrap t UCL	N/A	
633				90% KM Chebyshev UCL	0.024				95% KM Chebyshev UCL	0.0271	
634				97.5% KM Chebyshev UCL	0.0313				99% KM Chebyshev UCL	0.0396	
635											
636	Gamma GOF Tests on Detected Observations Only										

	A	B	C	D	E	F	G	H	I	J	K	L
637	Not Enough Data to Perform GOF Test											
638												
639	Gamma Statistics on Detected Data Only											
640					k hat (MLE)	32.73			k star (bias corrected MLE)			N/A
641					Theta hat (MLE)	7.0281E-4			Theta star (bias corrected MLE)			N/A
642					nu hat (MLE)	130.9			nu star (bias corrected)			N/A
643					MLE Mean (bias corrected)	N/A			MLE Sd (bias corrected)			N/A
644												
645	Gamma Kaplan-Meier (KM) Statistics											
646					k hat (KM)	16.95			nu hat (KM)			237.2
647									Adjusted Level of Significance (β)			0.0158
648					Approximate Chi Square Value (237.24, α)	202.6			Adjusted Chi Square Value (237.24, β)			192.9
649					95% Gamma Approximate KM-UCL (use when n>=50)	0.0202			95% Gamma Adjusted KM-UCL (use when n<50)			0.0213
650												
651	Lognormal GOF Test on Detected Observations Only											
652	Not Enough Data to Perform GOF Test											
653												
654	Lognormal ROS Statistics Using Imputed Non-Detects											
655					Mean in Original Scale	0.0116			Mean in Log Scale			-4.645
656					SD in Original Scale	0.00828			SD in Log Scale			0.64
657					95% t UCL (assumes normality of ROS data)	0.0177			95% Percentile Bootstrap UCL			0.0166
658					95% BCA Bootstrap UCL	0.0173			95% Bootstrap t UCL			0.0328
659					95% H-UCL (Log ROS)	0.0243						
660												
661	DL/2 Statistics											
662	DL/2 Normal						DL/2 Log-Transformed					
663					Mean in Original Scale	0.0123			Mean in Log Scale			-4.532
664					SD in Original Scale	0.00768			SD in Log Scale			0.519
665					95% t UCL (Assumes normality)	0.0179			95% H-Stat UCL			0.0209
666	DL/2 is not a recommended method, provided for comparisons and historical reasons											
667												
668	Nonparametric Distribution Free UCL Statistics											
669	Data do not follow a Discernible Distribution at 5% Significance Level											
670												
671	Suggested UCL to Use											
672					95% KM (t) UCL	0.0216			95% KM (% Bootstrap) UCL			N/A
673	Warning: One or more Recommended UCL(s) not available!											
674												
675	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
676	Recommendations are based upon data size, data distribution, and skewness.											
677	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
678	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
679												
680	Diethyl phthalate											
681												
682	General Statistics											
683					Total Number of Observations	13			Number of Distinct Observations			10
684					Number of Detects	7			Number of Non-Detects			6
685					Number of Distinct Detects	7			Number of Distinct Non-Detects			3
686					Minimum Detect	0.17			Minimum Non-Detect			0.067
687					Maximum Detect	1.2			Maximum Non-Detect			0.086
688					Variance Detects	0.113			Percent Non-Detects			46.15%
689					Mean Detects	0.584			SD Detects			0.336

690				Median Detects	0.51				CV Detects	0.575	
691				Skewness Detects	0.95				Kurtosis Detects	1.139	
692				Mean of Logged Detects	-0.69				SD of Logged Detects	0.624	
693											
694				Normal GOF Test on Detects Only							
695				Shapiro Wilk Test Statistic	0.95			Shapiro Wilk GOF Test			
696				5% Shapiro Wilk Critical Value	0.803			Detected Data appear Normal at 5% Significance Level			
697				Lilliefors Test Statistic	0.159			Lilliefors GOF Test			
698				5% Lilliefors Critical Value	0.335			Detected Data appear Normal at 5% Significance Level			
699				Detected Data appear Normal at 5% Significance Level							
700											
701				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
702				Mean	0.346			Standard Error of Mean	0.103		
703				SD	0.344			95% KM (BCA) UCL	0.536		
704				95% KM (t) UCL	0.529			95% KM (Percentile Bootstrap) UCL	0.521		
705				95% KM (z) UCL	0.515			95% KM Bootstrap t UCL	0.578		
706				90% KM Chebyshev UCL	0.655			95% KM Chebyshev UCL	0.795		
707				97.5% KM Chebyshev UCL	0.99			99% KM Chebyshev UCL	1.372		
708											
709				Gamma GOF Tests on Detected Observations Only							
710				A-D Test Statistic	0.144			Anderson-Darling GOF Test			
711				5% A-D Critical Value	0.711			Detected data appear Gamma Distributed at 5% Significance Level			
712				K-S Test Statistic	0.117			Kolmogrov-Smirnoff GOF			
713				5% K-S Critical Value	0.313			Detected data appear Gamma Distributed at 5% Significance Level			
714				Detected data appear Gamma Distributed at 5% Significance Level							
715											
716				Gamma Statistics on Detected Data Only							
717				k hat (MLE)	3.429			k star (bias corrected MLE)	2.055		
718				Theta hat (MLE)	0.17			Theta star (bias corrected MLE)	0.284		
719				nu hat (MLE)	48.01			nu star (bias corrected)	28.77		
720				MLE Mean (bias corrected)	0.584			MLE Sd (bias corrected)	0.408		
721											
722				Gamma Kaplan-Meier (KM) Statistics							
723				k hat (KM)	1.007			nu hat (KM)	26.19		
724				Approximate Chi Square Value (26.19, α)	15.53			Adjusted Chi Square Value (26.19, β)	14.37		
725				95% Gamma Approximate KM-UCL (use when n>=50)	0.583			95% Gamma Adjusted KM-UCL (use when n<50)	0.63		
726											
727				Gamma ROS Statistics using Imputed Non-Detects							
728				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
729				GROS may not be used when kstar of detected data is small such as < 0.1							
730				For such situations, GROS method tends to yield inflated values of UCLs and BTVs							
731				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
732				Minimum	0.01			Mean	0.319		
733				Maximum	1.2			Median	0.17		
734				SD	0.381			CV	1.192		
735				k hat (MLE)	0.477			k star (bias corrected MLE)	0.418		
736				Theta hat (MLE)	0.67			Theta star (bias corrected MLE)	0.764		
737				nu hat (MLE)	12.39			nu star (bias corrected)	10.87		
738				MLE Mean (bias corrected)	0.319			MLE Sd (bias corrected)	0.494		
739								Adjusted Level of Significance (β)	0.0301		
740				Approximate Chi Square Value (10.87, α)	4.489			Adjusted Chi Square Value (10.87, β)	3.922		
741				95% Gamma Approximate UCL (use when n>=50)	0.773			95% Gamma Adjusted UCL (use when n<50)	0.885		
742											

743	Lognormal GOF Test on Detected Observations Only										
744				Shapiro Wilk Test Statistic	0.981	Shapiro Wilk GOF Test					
745				5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level					
746				Lilliefors Test Statistic	0.155	Lilliefors GOF Test					
747				5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level					
748	Detected Data appear Lognormal at 5% Significance Level										
749											
750	Lognormal ROS Statistics Using Imputed Non-Detects										
751				Mean in Original Scale	0.358	Mean in Log Scale	-1.489				
752				SD in Original Scale	0.349	SD in Log Scale	1.033				
753				95% t UCL (assumes normality of ROS data)	0.53	95% Percentile Bootstrap UCL	0.521				
754				95% BCA Bootstrap UCL	0.551	95% Bootstrap t UCL	0.597				
755				95% H-UCL (Log ROS)	0.914						
756											
757	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed										
758				KM Mean (logged)	-1.619	95% H-UCL (KM -Log)	0.922				
759				KM SD (logged)	1.089	95% Critical H Value (KM-Log)	3.005				
760				KM Standard Error of Mean (logged)	0.326						
761											
762	DL/2 Statistics										
763				DL/2 Normal		DL/2 Log-Transformed					
764				Mean in Original Scale	0.331	Mean in Log Scale	-1.915				
765				SD in Original Scale	0.371	SD in Log Scale	1.448				
766				95% t UCL (Assumes normality)	0.514	95% H-Stat UCL	1.955				
767	DL/2 is not a recommended method, provided for comparisons and historical reasons										
768											
769	Nonparametric Distribution Free UCL Statistics										
770	Detected Data appear Normal Distributed at 5% Significance Level										
771											
772	Suggested UCL to Use										
773				95% KM (t) UCL	0.529	95% KM (Percentile Bootstrap) UCL	0.521				
774											
775	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
776	Recommendations are based upon data size, data distribution, and skewness.										
777	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
778	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
779											
780	Dimethyl phthalate										
781											
782	General Statistics										
783				Total Number of Observations	13	Number of Distinct Observations	9				
784				Number of Detects	2	Number of Non-Detects	11				
785				Number of Distinct Detects	2	Number of Distinct Non-Detects	7				
786				Minimum Detect	0.15	Minimum Non-Detect	0.068				
787				Maximum Detect	0.33	Maximum Non-Detect	0.09				
788				Variance Detects	0.0162	Percent Non-Detects	84.62%				
789				Mean Detects	0.24	SD Detects	0.127				
790				Median Detects	0.24	CV Detects	0.53				
791				Skewness Detects	N/A	Kurtosis Detects	N/A				
792				Mean of Logged Detects	-1.503	SD of Logged Detects	0.558				
793											
794	Warning: Data set has only 2 Detected Values.										
795	This is not enough to compute meaningful or reliable statistics and estimates.										

796											
797											
798					Normal GOF Test on Detects Only						
799					Not Enough Data to Perform GOF Test						
800											
801					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
802					Mean	0.0945			Standard Error of Mean	0.028	
803					SD	0.0714			95% KM (BCA) UCL	N/A	
804					95% KM (t) UCL	0.144			95% KM (Percentile Bootstrap) UCL	N/A	
805					95% KM (z) UCL	0.141			95% KM Bootstrap t UCL	N/A	
806					90% KM Chebyshev UCL	0.178			95% KM Chebyshev UCL	0.217	
807					97.5% KM Chebyshev UCL	0.269			99% KM Chebyshev UCL	0.373	
808											
809					Gamma GOF Tests on Detected Observations Only						
810					Not Enough Data to Perform GOF Test						
811											
812					Gamma Statistics on Detected Data Only						
813					k hat (MLE)	6.761			k star (bias corrected MLE)	N/A	
814					Theta hat (MLE)	0.0355			Theta star (bias corrected MLE)	N/A	
815					nu hat (MLE)	27.04			nu star (bias corrected)	N/A	
816					MLE Mean (bias corrected)	N/A			MLE Sd (bias corrected)	N/A	
817											
818					Gamma Kaplan-Meier (KM) Statistics						
819					k hat (KM)	1.751			nu hat (KM)	45.51	
820									Adjusted Level of Significance (β)	0.0301	
821					Approximate Chi Square Value (45.51, α)	31.04			Adjusted Chi Square Value (45.51, β)	29.34	
822					95% Gamma Approximate KM-UCL (use when n>=50)	0.139			95% Gamma Adjusted KM-UCL (use when n<50)	0.147	
823											
824					Lognormal GOF Test on Detected Observations Only						
825					Not Enough Data to Perform GOF Test						
826											
827					Lognormal ROS Statistics Using Imputed Non-Detects						
828					Mean in Original Scale	0.0439			Mean in Log Scale	-4.528	
829					SD in Original Scale	0.0947			SD in Log Scale	1.537	
830					95% t UCL (assumes normality of ROS data)	0.0907			95% Percentile Bootstrap UCL	0.0909	
831					95% BCA Bootstrap UCL	0.114			95% Bootstrap t UCL	0.573	
832					95% H-UCL (Log ROS)	0.194					
833											
834					DL/2 Statistics						
835					DL/2 Normal				DL/2 Log-Transformed		
836					Mean in Original Scale	0.068			Mean in Log Scale	-3.03	
837					SD in Original Scale	0.0848			SD in Log Scale	0.702	
838					95% t UCL (Assumes normality)	0.11			95% H-Stat UCL	0.1	
839					DL/2 is not a recommended method, provided for comparisons and historical reasons						
840											
841					Nonparametric Distribution Free UCL Statistics						
842					Data do not follow a Discernible Distribution at 5% Significance Level						
843											
844					Suggested UCL to Use						
845					95% KM (t) UCL	0.144			95% KM (% Bootstrap) UCL	N/A	
846					Warning: One or more Recommended UCL(s) not available!						
847											
848					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						

849	Recommendations are based upon data size, data distribution, and skewness.										
850	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
851	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
852											
853	Fluoranthene										
854											
855	General Statistics										
856					Total Number of Observations	7			Number of Distinct Observations	6	
857					Number of Detects	6			Number of Non-Detects	1	
858					Number of Distinct Detects	5			Number of Distinct Non-Detects	1	
859					Minimum Detect	0.004			Minimum Non-Detect	0.003	
860					Maximum Detect	0.076			Maximum Non-Detect	0.003	
861					Variance Detects	8.2297E-4			Percent Non-Detects	14.29%	
862					Mean Detects	0.0208			SD Detects	0.0287	
863					Median Detects	0.0055			CV Detects	1.377	
864					Skewness Detects	1.937			Kurtosis Detects	3.59	
865					Mean of Logged Detects	-4.559			SD of Logged Detects	1.208	
866											
867	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use										
868	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.										
869	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).										
870	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0										
871											
872	Normal GOF Test on Detects Only										
873					Shapiro Wilk Test Statistic	0.686			Shapiro Wilk GOF Test		
874					5% Shapiro Wilk Critical Value	0.788			Detected Data Not Normal at 5% Significance Level		
875					Lilliefors Test Statistic	0.364			Lilliefors GOF Test		
876					5% Lilliefors Critical Value	0.362			Detected Data Not Normal at 5% Significance Level		
877	Detected Data Not Normal at 5% Significance Level										
878											
879	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
880					Mean	0.0183			Standard Error of Mean	0.0104	
881					SD	0.025			95% KM (BCA) UCL	0.0353	
882					95% KM (t) UCL	0.0384			95% KM (Percentile Bootstrap) UCL	0.0353	
883					95% KM (z) UCL	0.0353			95% KM Bootstrap t UCL	0.378	
884					90% KM Chebyshev UCL	0.0494			95% KM Chebyshev UCL	0.0635	
885					97.5% KM Chebyshev UCL	0.083			99% KM Chebyshev UCL	0.121	
886											
887	Gamma GOF Tests on Detected Observations Only										
888					A-D Test Statistic	0.81			Anderson-Darling GOF Test		
889					5% A-D Critical Value	0.718			Detected Data Not Gamma Distributed at 5% Significance Level		
890					K-S Test Statistic	0.382			Kolmogrov-Smirnoff GOF		
891					5% K-S Critical Value	0.342			Detected Data Not Gamma Distributed at 5% Significance Level		
892	Detected Data Not Gamma Distributed at 5% Significance Level										
893											
894	Gamma Statistics on Detected Data Only										
895					k hat (MLE)	0.856			k star (bias corrected MLE)	0.539	
896					Theta hat (MLE)	0.0243			Theta star (bias corrected MLE)	0.0386	
897					nu hat (MLE)	10.27			nu star (bias corrected)	6.469	
898					MLE Mean (bias corrected)	0.0208			MLE Sd (bias corrected)	0.0284	
899											
900	Gamma Kaplan-Meier (KM) Statistics										
901					k hat (KM)	0.533			nu hat (KM)	7.469	

902	Approximate Chi Square Value (7.47, α)				2.431	Adjusted Chi Square Value (7.47, β)					1.656
903	95% Gamma Approximate KM-UCL (use when n>=50)				0.0562	95% Gamma Adjusted KM-UCL (use when n<50)					0.0825
904											
905	Gamma ROS Statistics using Imputed Non-Detects										
906	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
907	GROS may not be used when kstar of detected data is small such as < 0.1										
908	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
909	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
910	Minimum				0.004	Mean					0.0193
911	Maximum				0.076	Median					0.006
912	SD				0.0265	CV					1.374
913	k hat (MLE)				0.942	k star (bias corrected MLE)					0.634
914	Theta hat (MLE)				0.0205	Theta star (bias corrected MLE)					0.0304
915	nu hat (MLE)				13.19	nu star (bias corrected)					8.872
916	MLE Mean (bias corrected)				0.0193	MLE Sd (bias corrected)					0.0242
917						Adjusted Level of Significance (β)					0.0158
918	Approximate Chi Square Value (8.87, α)				3.25	Adjusted Chi Square Value (8.87, β)					2.312
919	95% Gamma Approximate UCL (use when n>=50)				0.0526	95% Gamma Adjusted UCL (use when n<50)					0.074
920											
921	Lognormal GOF Test on Detected Observations Only										
922	Shapiro Wilk Test Statistic				0.791	Shapiro Wilk GOF Test					
923	5% Shapiro Wilk Critical Value				0.788	Detected Data appear Lognormal at 5% Significance Level					
924	Lilliefors Test Statistic				0.344	Lilliefors GOF Test					
925	5% Lilliefors Critical Value				0.362	Detected Data appear Lognormal at 5% Significance Level					
926	Detected Data appear Lognormal at 5% Significance Level										
927											
928	Lognormal ROS Statistics Using Imputed Non-Detects										
929	Mean in Original Scale				0.0179	Mean in Log Scale					-4.966
930	SD in Original Scale				0.0273	SD in Log Scale					1.541
931	95% t UCL (assumes normality of ROS data)				0.038	95% Percentile Bootstrap UCL					0.0351
932	95% BCA Bootstrap UCL				0.0389	95% Bootstrap t UCL					0.206
933	95% H-UCL (Log ROS)				0.646						
934											
935	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed										
936	KM Mean (logged)				-4.737	95% H-UCL (KM -Log)					0.1
937	KM SD (logged)				1.111	95% Critical H Value (KM-Log)					4.015
938	KM Standard Error of Mean (logged)				0.46						
939											
940	DL/2 Statistics										
941	DL/2 Normal					DL/2 Log-Transformed					
942	Mean in Original Scale				0.0181	Mean in Log Scale					-4.836
943	SD in Original Scale				0.0272	SD in Log Scale					1.325
944	95% t UCL (Assumes normality)				0.038	95% H-Stat UCL					0.236
945	DL/2 is not a recommended method, provided for comparisons and historical reasons										
946											
947	Nonparametric Distribution Free UCL Statistics										
948	Detected Data appear Lognormal Distributed at 5% Significance Level										
949											
950	Suggested UCL to Use										
951	97.5% KM (Chebyshev) UCL				0.083						
952	Warning: Recommended UCL exceeds the maximum observation										
953											
954	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										

955	Recommendations are based upon data size, data distribution, and skewness.										
956	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
957	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
958											
959	Naphthalene										
960											
961	General Statistics										
962					Total Number of Observations	7			Number of Distinct Observations	4	
963					Number of Detects	3			Number of Non-Detects	4	
964					Number of Distinct Detects	3			Number of Distinct Non-Detects	1	
965					Minimum Detect	0.005			Minimum Non-Detect	0.003	
966					Maximum Detect	0.034			Maximum Non-Detect	0.003	
967					Variance Detects	2.6233E-4			Percent Non-Detects	57.14%	
968					Mean Detects	0.0153			SD Detects	0.0162	
969					Median Detects	0.007			CV Detects	1.056	
970					Skewness Detects	1.702			Kurtosis Detects	N/A	
971					Mean of Logged Detects	-4.547			SD of Logged Detects	1.024	
972											
973	Warning: Data set has only 3 Detected Values.										
974	This is not enough to compute meaningful or reliable statistics and estimates.										
975											
976											
977	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use										
978	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.										
979	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).										
980	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0										
981											
982	Normal GOF Test on Detects Only										
983					Shapiro Wilk Test Statistic	0.801			Shapiro Wilk GOF Test		
984					5% Shapiro Wilk Critical Value	0.767			Detected Data appear Normal at 5% Significance Level		
985					Lilliefors Test Statistic	0.363			Lilliefors GOF Test		
986					5% Lilliefors Critical Value	0.512			Detected Data appear Normal at 5% Significance Level		
987	Detected Data appear Normal at 5% Significance Level										
988											
989	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
990					Mean	0.00829			Standard Error of Mean	0.0049	
991					SD	0.0106			95% KM (BCA) UCL	N/A	
992					95% KM (t) UCL	0.0178			95% KM (Percentile Bootstrap) UCL	N/A	
993					95% KM (z) UCL	0.0164			95% KM Bootstrap t UCL	N/A	
994					90% KM Chebyshev UCL	0.023			95% KM Chebyshev UCL	0.0297	
995					97.5% KM Chebyshev UCL	0.0389			99% KM Chebyshev UCL	0.0571	
996											
997	Gamma GOF Tests on Detected Observations Only										
998	Not Enough Data to Perform GOF Test										
999											
1000	Gamma Statistics on Detected Data Only										
1001					k hat (MLE)	1.498			k star (bias corrected MLE)	N/A	
1002					Theta hat (MLE)	0.0102			Theta star (bias corrected MLE)	N/A	
1003					nu hat (MLE)	8.989			nu star (bias corrected)	N/A	
1004					MLE Mean (bias corrected)	N/A			MLE Sd (bias corrected)	N/A	
1005											
1006	Gamma Kaplan-Meier (KM) Statistics										
1007					k hat (KM)	0.612			nu hat (KM)	8.566	

1008									Adjusted Level of Significance (β)			0.0158
1009					Approximate Chi Square Value (8.57, α)		3.067		Adjusted Chi Square Value (8.57, β)			2.164
1010					95% Gamma Approximate KM-UCL (use when n>=50)		0.0231		95% Gamma Adjusted KM-UCL (use when n<50)			0.0328
1011												
1012							Lognormal GOF Test on Detected Observations Only					
1013							Shapiro Wilk Test Statistic	0.877		Shapiro Wilk GOF Test		
1014							5% Shapiro Wilk Critical Value	0.767		Detected Data appear Lognormal at 5% Significance Level		
1015							Lilliefors Test Statistic	0.324		Lilliefors GOF Test		
1016							5% Lilliefors Critical Value	0.512		Detected Data appear Lognormal at 5% Significance Level		
1017							Detected Data appear Lognormal at 5% Significance Level					
1018												
1019							Lognormal ROS Statistics Using Imputed Non-Detects					
1020							Mean in Original Scale	0.00682		Mean in Log Scale		-6.637
1021							SD in Original Scale	0.0123		SD in Log Scale		2.208
1022							95% t UCL (assumes normality of ROS data)	0.0158		95% Percentile Bootstrap UCL		0.015
1023							95% BCA Bootstrap UCL	0.0166		95% Bootstrap t UCL		0.0347
1024							95% H-UCL (Log ROS)	11.94				
1025												
1026							UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed					
1027							KM Mean (logged)	-5.268		95% H-UCL (KM -Log)		0.0218
1028							KM SD (logged)	0.83		95% Critical H Value (KM-Log)		3.234
1029							KM Standard Error of Mean (logged)	0.384				
1030												
1031							DL/2 Statistics					
1032							DL/2 Normal			DL/2 Log-Transformed		
1033							Mean in Original Scale	0.00743		Mean in Log Scale		-5.664
1034							SD in Original Scale	0.0119		SD in Log Scale		1.201
1035							95% t UCL (Assumes normality)	0.0162		95% H-Stat UCL		0.058
1036							DL/2 is not a recommended method, provided for comparisons and historical reasons					
1037												
1038							Nonparametric Distribution Free UCL Statistics					
1039							Detected Data appear Normal Distributed at 5% Significance Level					
1040												
1041							Suggested UCL to Use					
1042							95% KM (t) UCL	0.0178		95% KM (Percentile Bootstrap) UCL		N/A
1043							Warning: One or more Recommended UCL(s) not available!					
1044												
1045							Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.					
1046							Recommendations are based upon data size, data distribution, and skewness.					
1047							These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).					
1048							However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.					
1049												
1050	Benzo(a)anthracene											
1051												
1052							General Statistics					
1053							Total Number of Observations	7		Number of Distinct Observations		3
1054							Number of Detects	2		Number of Non-Detects		5
1055							Number of Distinct Detects	2		Number of Distinct Non-Detects		1
1056							Minimum Detect	0.005		Minimum Non-Detect		0.003
1057							Maximum Detect	0.027		Maximum Non-Detect		0.003
1058							Variance Detects	2.4200E-4		Percent Non-Detects		71.43%
1059							Mean Detects	0.016		SD Detects		0.0156
1060							Median Detects	0.016		CV Detects		0.972

1061				Skewness Detects	N/A				Kurtosis Detects	N/A	
1062				Mean of Logged Detects	-4.455				SD of Logged Detects	1.192	
1063											
1064				Warning: Data set has only 2 Detected Values.							
1065				This is not enough to compute meaningful or reliable statistics and estimates.							
1066											
1067											
1068				Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use							
1069				guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.							
1070				For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).							
1071				Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0							
1072											
1073				Normal GOF Test on Detects Only							
1074				Not Enough Data to Perform GOF Test							
1075											
1076				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
1077				Mean	0.00671				Standard Error of Mean	0.00444	
1078				SD	0.00831				95% KM (BCA) UCL	N/A	
1079				95% KM (t) UCL	0.0153				95% KM (Percentile Bootstrap) UCL	N/A	
1080				95% KM (z) UCL	0.014				95% KM Bootstrap t UCL	N/A	
1081				90% KM Chebyshev UCL	0.02				95% KM Chebyshev UCL	0.0261	
1082				97.5% KM Chebyshev UCL	0.0345				99% KM Chebyshev UCL	0.0509	
1083											
1084				Gamma GOF Tests on Detected Observations Only							
1085				Not Enough Data to Perform GOF Test							
1086											
1087				Gamma Statistics on Detected Data Only							
1088				k hat (MLE)	1.71				k star (bias corrected MLE)	N/A	
1089				Theta hat (MLE)	0.00935				Theta star (bias corrected MLE)	N/A	
1090				nu hat (MLE)	6.842				nu star (bias corrected)	N/A	
1091				MLE Mean (bias corrected)	N/A				MLE Sd (bias corrected)	N/A	
1092											
1093				Gamma Kaplan-Meier (KM) Statistics							
1094				k hat (KM)	0.653				nu hat (KM)	9.139	
1095									Adjusted Level of Significance (β)	0.0158	
1096				Approximate Chi Square Value (9.14, α)	3.411				Adjusted Chi Square Value (9.14, β)	2.443	
1097				95% Gamma Approximate KM-UCL (use when n>=50)	0.018				95% Gamma Adjusted KM-UCL (use when n<50)	0.0251	
1098											
1099				Lognormal GOF Test on Detected Observations Only							
1100				Not Enough Data to Perform GOF Test							
1101											
1102				Lognormal ROS Statistics Using Imputed Non-Detects							
1103				Mean in Original Scale	0.00466				Mean in Log Scale	-8.65	
1104				SD in Original Scale	0.01				SD in Log Scale	3.401	
1105				95% t UCL (assumes normality of ROS data)	0.012				95% Percentile Bootstrap UCL	0.0117	
1106				95% BCA Bootstrap UCL	0.0154				95% Bootstrap t UCL	0.302	
1107				95% H-UCL (Log ROS)	339269						
1108											
1109				DL/2 Statistics							
1110				DL/2 Normal					DL/2 Log-Transformed		
1111				Mean in Original Scale	0.00564				Mean in Log Scale	-5.917	
1112				SD in Original Scale	0.00951				SD in Log Scale	1.111	
1113				95% t UCL (Assumes normality)	0.0126				95% H-Stat UCL	0.0309	

1114	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1115												
1116	Nonparametric Distribution Free UCL Statistics											
1117	Data do not follow a Discernible Distribution at 5% Significance Level											
1118												
1119	Suggested UCL to Use											
1120	95% KM (BCA) UCL	N/A										
1121	Warning: One or more Recommended UCL(s) not available!											
1122												
1123	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1124	Recommendations are based upon data size, data distribution, and skewness.											
1125	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1126	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1127												
1128	bis(2-Ethylhexyl)phthalate											
1129												
1130	General Statistics											
1131	Total Number of Observations	13			Number of Distinct Observations	11						
1132	Number of Detects	5			Number of Non-Detects	8						
1133	Number of Distinct Detects	5			Number of Distinct Non-Detects	6						
1134	Minimum Detect	0.082			Minimum Non-Detect	0.067						
1135	Maximum Detect	0.7			Maximum Non-Detect	0.086						
1136	Variance Detects	0.0515			Percent Non-Detects	61.54%						
1137	Mean Detects	0.38			SD Detects	0.227						
1138	Median Detects	0.34			CV Detects	0.596						
1139	Skewness Detects	0.228			Kurtosis Detects	0.714						
1140	Mean of Logged Detects	-1.173			SD of Logged Detects	0.808						
1141												
1142	Normal GOF Test on Detects Only											
1143	Shapiro Wilk Test Statistic	0.981			Shapiro Wilk GOF Test							
1144	5% Shapiro Wilk Critical Value	0.762			Detected Data appear Normal at 5% Significance Level							
1145	Lilliefors Test Statistic	0.178			Lilliefors GOF Test							
1146	5% Lilliefors Critical Value	0.396			Detected Data appear Normal at 5% Significance Level							
1147	Detected Data appear Normal at 5% Significance Level											
1148												
1149	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1150	Mean	0.188			Standard Error of Mean	0.0613						
1151	SD	0.198			95% KM (BCA) UCL	0.29						
1152	95% KM (t) UCL	0.297			95% KM (Percentile Bootstrap) UCL	0.287						
1153	95% KM (z) UCL	0.288			95% KM Bootstrap t UCL	0.289						
1154	90% KM Chebyshev UCL	0.372			95% KM Chebyshev UCL	0.455						
1155	97.5% KM Chebyshev UCL	0.57			99% KM Chebyshev UCL	0.797						
1156												
1157	Gamma GOF Tests on Detected Observations Only											
1158	A-D Test Statistic	0.3			Anderson-Darling GOF Test							
1159	5% A-D Critical Value	0.683			Detected data appear Gamma Distributed at 5% Significance Level							
1160	K-S Test Statistic	0.258			Kolmogrov-Smirnoff GOF							
1161	5% K-S Critical Value	0.36			Detected data appear Gamma Distributed at 5% Significance Level							
1162	Detected data appear Gamma Distributed at 5% Significance Level											
1163												
1164	Gamma Statistics on Detected Data Only											
1165	k hat (MLE)	2.582			k star (bias corrected MLE)	1.166						
1166	Theta hat (MLE)	0.147			Theta star (bias corrected MLE)	0.326						

1167					nu hat (MLE)	25.82				nu star (bias corrected)	11.66
1168					MLE Mean (bias corrected)	0.38				MLE Sd (bias corrected)	0.352
1169											
1170					Gamma Kaplan-Meier (KM) Statistics						
1171					k hat (KM)	0.902				nu hat (KM)	23.46
1172					Approximate Chi Square Value (23.46, α)	13.44				Adjusted Chi Square Value (23.46, β)	12.37
1173					95% Gamma Approximate KM-UCL (use when n>=50)	0.328				95% Gamma Adjusted KM-UCL (use when n<50)	0.356
1174											
1175					Gamma ROS Statistics using Imputed Non-Detects						
1176					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
1177					GROS may not be used when kstar of detected data is small such as < 0.1						
1178					For such situations, GROS method tends to yield inflated values of UCLs and BTVs						
1179					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
1180					Minimum	0.01				Mean	0.152
1181					Maximum	0.7				Median	0.01
1182					SD	0.229				CV	1.5
1183					k hat (MLE)	0.459				k star (bias corrected MLE)	0.404
1184					Theta hat (MLE)	0.332				Theta star (bias corrected MLE)	0.377
1185					nu hat (MLE)	11.92				nu star (bias corrected)	10.5
1186					MLE Mean (bias corrected)	0.152				MLE Sd (bias corrected)	0.24
1187										Adjusted Level of Significance (β)	0.0301
1188					Approximate Chi Square Value (10.50, α)	4.259				Adjusted Chi Square Value (10.50, β)	3.71
1189					95% Gamma Approximate UCL (use when n>=50)	0.376				95% Gamma Adjusted UCL (use when n<50)	0.432
1190											
1191					Lognormal GOF Test on Detected Observations Only						
1192					Shapiro Wilk Test Statistic	0.89				Shapiro Wilk GOF Test	
1193					5% Shapiro Wilk Critical Value	0.762				Detected Data appear Lognormal at 5% Significance Level	
1194					Lilliefors Test Statistic	0.301				Lilliefors GOF Test	
1195					5% Lilliefors Critical Value	0.396				Detected Data appear Lognormal at 5% Significance Level	
1196					Detected Data appear Lognormal at 5% Significance Level						
1197											
1198					Lognormal ROS Statistics Using Imputed Non-Detects						
1199					Mean in Original Scale	0.164				Mean in Log Scale	-2.664
1200					SD in Original Scale	0.221				SD in Log Scale	1.345
1201					95% t UCL (assumes normality of ROS data)	0.273				95% Percentile Bootstrap UCL	0.27
1202					95% BCA Bootstrap UCL	0.284				95% Bootstrap t UCL	0.337
1203					95% H-UCL (Log ROS)	0.665					
1204											
1205					UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed						
1206					KM Mean (logged)	-2.112				95% H-UCL (KM -Log)	0.341
1207					KM SD (logged)	0.868				95% Critical H Value (KM-Log)	2.627
1208					KM Standard Error of Mean (logged)	0.269					
1209											
1210					DL/2 Statistics						
1211					DL/2 Normal					DL/2 Log-Transformed	
1212					Mean in Original Scale	0.168				Mean in Log Scale	-2.504
1213					SD in Original Scale	0.218				SD in Log Scale	1.193
1214					95% t UCL (Assumes normality)	0.276				95% H-Stat UCL	0.5
1215					DL/2 is not a recommended method, provided for comparisons and historical reasons						
1216											
1217					Nonparametric Distribution Free UCL Statistics						
1218					Detected Data appear Normal Distributed at 5% Significance Level						
1219											

	A	B	C	D	E	F	G	H	I	J	K	L
1220	Suggested UCL to Use											
1221					95% KM (t) UCL	0.297			95% KM (Percentile Bootstrap) UCL			0.287
1222												
1223	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1224	Recommendations are based upon data size, data distribution, and skewness.											
1225	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1226	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1227												
1228	Di-n-butyl phthalate											
1229												
1230	General Statistics											
1231					Total Number of Observations	13			Number of Distinct Observations			13
1232					Number of Detects	12			Number of Non-Detects			1
1233					Number of Distinct Detects	12			Number of Distinct Non-Detects			1
1234					Minimum Detect	0.12			Minimum Non-Detect			0.086
1235					Maximum Detect	20			Maximum Non-Detect			0.086
1236					Variance Detects	31.18			Percent Non-Detects			7.692%
1237					Mean Detects	2.423			SD Detects			5.584
1238					Median Detects	0.51			CV Detects			2.305
1239					Skewness Detects	3.361			Kurtosis Detects			11.46
1240					Mean of Logged Detects	-0.278			SD of Logged Detects			1.362
1241												
1242	Normal GOF Test on Detects Only											
1243					Shapiro Wilk Test Statistic	0.434			Shapiro Wilk GOF Test			
1244					5% Shapiro Wilk Critical Value	0.859			Detected Data Not Normal at 5% Significance Level			
1245					Lilliefors Test Statistic	0.418			Lilliefors GOF Test			
1246					5% Lilliefors Critical Value	0.256			Detected Data Not Normal at 5% Significance Level			
1247	Detected Data Not Normal at 5% Significance Level											
1248												
1249	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
1250					Mean	2.243			Standard Error of Mean			1.499
1251					SD	5.174			95% KM (BCA) UCL			5.186
1252					95% KM (t) UCL	4.914			95% KM (Percentile Bootstrap) UCL			5.16
1253					95% KM (z) UCL	4.708			95% KM Bootstrap t UCL			19.63
1254					90% KM Chebyshev UCL	6.739			95% KM Chebyshev UCL			8.776
1255					97.5% KM Chebyshev UCL	11.6			99% KM Chebyshev UCL			17.16
1256												
1257	Gamma GOF Tests on Detected Observations Only											
1258					A-D Test Statistic	1.296			Anderson-Darling GOF Test			
1259					5% A-D Critical Value	0.782			Detected Data Not Gamma Distributed at 5% Significance Level			
1260					K-S Test Statistic	0.265			Kolmogrov-Smirnoff GOF			
1261					5% K-S Critical Value	0.258			Detected Data Not Gamma Distributed at 5% Significance Level			
1262	Detected Data Not Gamma Distributed at 5% Significance Level											
1263												
1264	Gamma Statistics on Detected Data Only											
1265					k hat (MLE)	0.54			k star (bias corrected MLE)			0.461
1266					Theta hat (MLE)	4.486			Theta star (bias corrected MLE)			5.26
1267					nu hat (MLE)	12.96			nu star (bias corrected)			11.05
1268					MLE Mean (bias corrected)	2.423			MLE Sd (bias corrected)			3.57
1269												
1270	Gamma Kaplan-Meier (KM) Statistics											
1271					k hat (KM)	0.188			nu hat (KM)			4.886
1272					Approximate Chi Square Value (4.89, α)	1.1			Adjusted Chi Square Value (4.89, β)			0.869

1273	95% Gamma Approximate KM-UCL (use when n>=50)				9.964	95% Gamma Adjusted KM-UCL (use when n<50)					12.61
1274												
1275	Gamma ROS Statistics using Imputed Non-Detects											
1276	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1277	GROS may not be used when kstar of detected data is small such as < 0.1											
1278	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
1279	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1280	Minimum				0.01	Mean					2.237
1281	Maximum				20	Median					0.48
1282	SD				5.388	CV					2.409
1283	k hat (MLE)				0.455	k star (bias corrected MLE)					0.402
1284	Theta hat (MLE)				4.913	Theta star (bias corrected MLE)					5.571
1285	nu hat (MLE)				11.84	nu star (bias corrected)					10.44
1286	MLE Mean (bias corrected)				2.237	MLE Sd (bias corrected)					3.53
1287						Adjusted Level of Significance (β)					0.0301
1288	Approximate Chi Square Value (10.44, α)				4.218	Adjusted Chi Square Value (10.44, β)					3.672
1289	95% Gamma Approximate UCL (use when n>=50)				5.536	95% Gamma Adjusted UCL (use when n<50)					6.36
1290												
1291	Lognormal GOF Test on Detected Observations Only											
1292	Shapiro Wilk Test Statistic				0.918	Shapiro Wilk GOF Test						
1293	5% Shapiro Wilk Critical Value				0.859	Detected Data appear Lognormal at 5% Significance Level						
1294	Lilliefors Test Statistic				0.181	Lilliefors GOF Test						
1295	5% Lilliefors Critical Value				0.256	Detected Data appear Lognormal at 5% Significance Level						
1296	Detected Data appear Lognormal at 5% Significance Level											
1297												
1298	Lognormal ROS Statistics Using Imputed Non-Detects											
1299	Mean in Original Scale				2.238	Mean in Log Scale					-0.527	
1300	SD in Original Scale				5.387	SD in Log Scale					1.584	
1301	95% t UCL (assumes normality of ROS data)				4.901	95% Percentile Bootstrap UCL					5.124	
1302	95% BCA Bootstrap UCL				6.803	95% Bootstrap t UCL					18.97	
1303	95% H-UCL (Log ROS)				12.51							
1304												
1305	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed											
1306	KM Mean (logged)				-0.445	95% H-UCL (KM -Log)					6.83	
1307	KM SD (logged)				1.38	95% Critical H Value (KM-Log)					3.548	
1308	KM Standard Error of Mean (logged)				0.4							
1309												
1310	DL/2 Statistics											
1311	DL/2 Normal					DL/2 Log-Transformed						
1312	Mean in Original Scale				2.239	Mean in Log Scale					-0.498	
1313	SD in Original Scale				5.387	SD in Log Scale					1.527	
1314	95% t UCL (Assumes normality)				4.902	95% H-Stat UCL					10.58	
1315	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1316												
1317	Nonparametric Distribution Free UCL Statistics											
1318	Detected Data appear Lognormal Distributed at 5% Significance Level											
1319												
1320	Suggested UCL to Use											
1321	97.5% KM (Chebyshev) UCL				11.6							
1322												
1323	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1324	Recommendations are based upon data size, data distribution, and skewness.											
1325	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											

1326	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
1327											
1328	Selenium										
1329											
1330	General Statistics										
1331					Total Number of Observations	13			Number of Distinct Observations	9	
1332					Number of Detects	1			Number of Non-Detects	12	
1333					Number of Distinct Detects	1			Number of Distinct Non-Detects	9	
1334											
1335	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
1336	s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT										
1337											
1338	The data set for variable Selenium was not processed!										
1339											
1340											
1341	Silver										
1342											
1343	General Statistics										
1344					Total Number of Observations	7			Number of Distinct Observations	5	
1345					Number of Detects	5			Number of Non-Detects	2	
1346					Number of Distinct Detects	3			Number of Distinct Non-Detects	2	
1347					Minimum Detect	0.11			Minimum Non-Detect	0.096	
1348					Maximum Detect	0.29			Maximum Non-Detect	0.098	
1349					Variance Detects	0.00608			Percent Non-Detects	28.57%	
1350					Mean Detects	0.154			SD Detects	0.078	
1351					Median Detects	0.11			CV Detects	0.506	
1352					Skewness Detects	1.986			Kurtosis Detects	3.948	
1353					Mean of Logged Detects	-1.951			SD of Logged Detects	0.421	
1354											
1355	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use										
1356	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.										
1357	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).										
1358	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0										
1359											
1360	Normal GOF Test on Detects Only										
1361					Shapiro Wilk Test Statistic	0.687			Shapiro Wilk GOF Test		
1362					5% Shapiro Wilk Critical Value	0.762			Detected Data Not Normal at 5% Significance Level		
1363					Lilliefors Test Statistic	0.32			Lilliefors GOF Test		
1364					5% Lilliefors Critical Value	0.396			Detected Data appear Normal at 5% Significance Level		
1365	Detected Data appear Approximate Normal at 5% Significance Level										
1366											
1367	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
1368					Mean	0.137			Standard Error of Mean	0.0273	
1369					SD	0.0645			95% KM (BCA) UCL	N/A	
1370					95% KM (t) UCL	0.19			95% KM (Percentile Bootstrap) UCL	N/A	
1371					95% KM (z) UCL	0.182			95% KM Bootstrap t UCL	N/A	
1372					90% KM Chebyshev UCL	0.219			95% KM Chebyshev UCL	0.256	
1373					97.5% KM Chebyshev UCL	0.308			99% KM Chebyshev UCL	0.409	
1374											
1375	Gamma GOF Tests on Detected Observations Only										
1376					A-D Test Statistic	0.813			Anderson-Darling GOF Test		
1377					5% A-D Critical Value	0.68			Detected Data Not Gamma Distributed at 5% Significance Level		
1378					K-S Test Statistic	0.348			Kolmogrov-Smirnoff GOF		

1379				5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level					
1380	Detected data follow Appr. Gamma Distribution at 5% Significance Level										
1381											
1382	Gamma Statistics on Detected Data Only										
1383				k hat (MLE)	6.368	k star (bias corrected MLE)	2.681				
1384				Theta hat (MLE)	0.0242	Theta star (bias corrected MLE)	0.0574				
1385				nu hat (MLE)	63.68	nu star (bias corrected)	26.81				
1386				MLE Mean (bias corrected)	0.154	MLE Sd (bias corrected)	0.0941				
1387											
1388	Gamma Kaplan-Meier (KM) Statistics										
1389				k hat (KM)	4.539	nu hat (KM)	63.55				
1390				Approximate Chi Square Value (63.55, α)	46.21	Adjusted Chi Square Value (63.55, β)	41.78				
1391				95% Gamma Approximate KM-UCL (use when n>=50)	0.189	95% Gamma Adjusted KM-UCL (use when n<50)	0.209				
1392											
1393	Gamma ROS Statistics using Imputed Non-Detects										
1394	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
1395	GROS may not be used when kstar of detected data is small such as < 0.1										
1396	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
1397	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
1398				Minimum	0.01	Mean	0.113				
1399				Maximum	0.29	Median	0.11				
1400				SD	0.0948	CV	0.84				
1401				k hat (MLE)	1.083	k star (bias corrected MLE)	0.714				
1402				Theta hat (MLE)	0.104	Theta star (bias corrected MLE)	0.158				
1403				nu hat (MLE)	15.17	nu star (bias corrected)	10				
1404				MLE Mean (bias corrected)	0.113	MLE Sd (bias corrected)	0.134				
1405						Adjusted Level of Significance (β)	0.0158				
1406				Approximate Chi Square Value (10.00, α)	3.942	Adjusted Chi Square Value (10.00, β)	2.881				
1407				95% Gamma Approximate UCL (use when n>=50)	0.286	95% Gamma Adjusted UCL (use when n<50)	0.392				
1408											
1409	Lognormal GOF Test on Detected Observations Only										
1410				Shapiro Wilk Test Statistic	0.73	Shapiro Wilk GOF Test					
1411				5% Shapiro Wilk Critical Value	0.762	Detected Data Not Lognormal at 5% Significance Level					
1412				Lilliefors Test Statistic	0.328	Lilliefors GOF Test					
1413				5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level					
1414	Detected Data appear Approximate Lognormal at 5% Significance Level										
1415											
1416	Lognormal ROS Statistics Using Imputed Non-Detects										
1417				Mean in Original Scale	0.125	Mean in Log Scale	-2.238				
1418				SD in Original Scale	0.0808	SD in Log Scale	0.598				
1419				95% t UCL (assumes normality of ROS data)	0.184	95% Percentile Bootstrap UCL	N/A				
1420				95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A				
1421				95% H-UCL (Log ROS)	0.245						
1422											
1423	UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed										
1424				KM Mean (logged)	-2.063	95% H-UCL (KM -Log)	0.19				
1425				KM SD (logged)	0.364	95% Critical H Value (KM-Log)	2.276				
1426				KM Standard Error of Mean (logged)	0.154						
1427											
1428	DL/2 Statistics										
1429	DL/2 Normal					DL/2 Log-Transformed					
1430				Mean in Original Scale	0.124	Mean in Log Scale	-2.258				
1431				SD in Original Scale	0.0819	SD in Log Scale	0.627				

1432			95% t UCL (Assumes normality)		0.184					95% H-Stat UCL		0.256
1433	DL/2 is not a recommended method, provided for comparisons and historical reasons											
1434												
1435	Nonparametric Distribution Free UCL Statistics											
1436	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
1437												
1438	Suggested UCL to Use											
1439			95% KM (t) UCL		0.19					95% KM (Percentile Bootstrap) UCL		N/A
1440	Warning: One or more Recommended UCL(s) not available!											
1441												
1442	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1443	Recommendations are based upon data size, data distribution, and skewness.											
1444	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1445	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1446												
1447												
1448	Dioxin/Furan											
1449												
1450	General Statistics											
1451			Total Number of Observations		13					Number of Distinct Observations		13
1452										Number of Missing Observations		0
1453			Minimum		0.43					Mean		2.948
1454			Maximum		10.07					Median		1.82
1455			SD		2.729					Std. Error of Mean		0.757
1456			Coefficient of Variation		0.926					Skewness		1.779
1457												
1458	Normal GOF Test											
1459			Shapiro Wilk Test Statistic		0.789					Shapiro Wilk GOF Test		
1460			5% Shapiro Wilk Critical Value		0.866					Data Not Normal at 5% Significance Level		
1461			Lilliefors Test Statistic		0.265					Lilliefors GOF Test		
1462			5% Lilliefors Critical Value		0.246					Data Not Normal at 5% Significance Level		
1463	Data Not Normal at 5% Significance Level											
1464												
1465	Assuming Normal Distribution											
1466			95% Normal UCL							95% UCLs (Adjusted for Skewness)		
1467			95% Student's-t UCL		4.297					95% Adjusted-CLT UCL (Chen-1995)		4.592
1468										95% Modified-t UCL (Johnson-1978)		4.359
1469												
1470	Gamma GOF Test											
1471			A-D Test Statistic		0.47					Anderson-Darling Gamma GOF Test		
1472			5% A-D Critical Value		0.75					Detected data appear Gamma Distributed at 5% Significance Level		
1473			K-S Test Statistic		0.207					Kolmogrov-Smirnoff Gamma GOF Test		
1474			5% K-S Critical Value		0.241					Detected data appear Gamma Distributed at 5% Significance Level		
1475	Detected data appear Gamma Distributed at 5% Significance Level											
1476												
1477	Gamma Statistics											
1478			k hat (MLE)		1.551					k star (bias corrected MLE)		1.244
1479			Theta hat (MLE)		1.901					Theta star (bias corrected MLE)		2.369
1480			nu hat (MLE)		40.33					nu star (bias corrected)		32.35
1481			MLE Mean (bias corrected)		2.948					MLE Sd (bias corrected)		2.642
1482										Approximate Chi Square Value (0.05)		20.35
1483			Adjusted Level of Significance		0.0301					Adjusted Chi Square Value		19
1484												

	A	B	C	D	E	F	G	H	I	J	K	L
1485	Assuming Gamma Distribution											
1486	95% Approximate Gamma UCL (use when n>=50)					4.686	95% Adjusted Gamma UCL (use when n<50)					5.018
1487												
1488	Lognormal GOF Test											
1489	Shapiro Wilk Test Statistic					0.946	Shapiro Wilk Lognormal GOF Test					
1490	5% Shapiro Wilk Critical Value					0.866	Data appear Lognormal at 5% Significance Level					
1491	Lilliefors Test Statistic					0.19	Lilliefors Lognormal GOF Test					
1492	5% Lilliefors Critical Value					0.246	Data appear Lognormal at 5% Significance Level					
1493	Data appear Lognormal at 5% Significance Level											
1494												
1495	Lognormal Statistics											
1496	Minimum of Logged Data					-0.844	Mean of logged Data					0.725
1497	Maximum of Logged Data					2.31	SD of logged Data					0.899
1498												
1499	Assuming Lognormal Distribution											
1500	95% H-UCL					6.197	90% Chebyshev (MVUE) UCL					5.344
1501	95% Chebyshev (MVUE) UCL					6.418	97.5% Chebyshev (MVUE) UCL					7.91
1502	99% Chebyshev (MVUE) UCL					10.84						
1503												
1504	Nonparametric Distribution Free UCL Statistics											
1505	Data appear to follow a Discernible Distribution at 5% Significance Level											
1506												
1507	Nonparametric Distribution Free UCLs											
1508	95% CLT UCL					4.193	95% Jackknife UCL					4.297
1509	95% Standard Bootstrap UCL					4.131	95% Bootstrap-t UCL					5.475
1510	95% Hall's Bootstrap UCL					6.229	95% Percentile Bootstrap UCL					4.234
1511	95% BCA Bootstrap UCL					4.478						
1512	90% Chebyshev(Mean, Sd) UCL					5.219	95% Chebyshev(Mean, Sd) UCL					6.247
1513	97.5% Chebyshev(Mean, Sd) UCL					7.675	99% Chebyshev(Mean, Sd) UCL					10.48
1514												
1515	Suggested UCL to Use											
1516	95% Adjusted Gamma UCL					5.018						
1517												
1518	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1519	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1520	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
1521	For additional insight the user may want to consult a statistician.											
1522												

Appendix D

09/23/2015
11:43:27
OUTPUT FILE - C:\REAMS\OBG1.OUT
RISK EXPOSURE DEFAULT FILE USED - SYSTEM DEFAULTS
SETUP DEFAULT FILE USED - OBG RISK ASSESSMENT
FILE PARAMETER DEFAULT FILE USED - SYSTEM DEFAULTS

****
RISK ANALYSIS RESULTS
****

****
****
** TOTAL EXPOSURE RISK : 1.3829700E-5 **
** TOTAL HAZARD INDEX : 0.2632782668 **
**
****
****

********** TOTAL PATHWAY RISKS **********

MEDIA	HAZARD	RISK
SOIL	0.2632782668	1.3829700E-5
GROUND WATER	0.0000000000	0.0000000E+0
SURFACE WATER	0.0000000000	0.0000000E+0
FOOD	0.0000000000	0.0000000E+0
AIR	0.0000000000	0.0000000E+0

********** HAZARD/RISK RESULTS BY CHEMICAL **********

COMMERCIAL

CHEMICAL - DIPHENYLAMINE

MEDIA	HAZARD	RISK
TOTAL	0.0000510292	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000510292	0.00000000000000E+0

CHEMICAL - 2,4-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0006536298	1.44800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0006536298	1.44800000000000E-7

CHEMICAL - 2,6-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0005054064	2.70700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0005054064	2.70700000000000E-7

CHEMICAL - 2,4,6-TRINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0004230275	2.30000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0004230275	2.30000000000000E-9

CHEMICAL - OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCINE (HMX)

MEDIA	HAZARD	RISK
TOTAL	0.0000052829	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000052829	0.00000000000000E+0

CHEMICAL - HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)

MEDIA	HAZARD	RISK
TOTAL	0.0016009671	1.88700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0016009671	1.88700000000000E-7

CHEMICAL - NITROGLYCERINE

MEDIA	HAZARD	RISK
TOTAL	0.2450808561	1.48800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.2450808561	1.48800000000000E-7

CHEMICAL - MERCURY (INORGANIC)

MEDIA	HAZARD	RISK
TOTAL	0.0131509750	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0131509750	0.00000000000000E+0

CHEMICAL - DIETHYLPHTHALATE

MEDIA	HAZARD	RISK

TOTAL	0.0000005897	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000005897	0.00000000000000E+0

CHEMICAL - FLUORANTHENE

MEDIA	HAZARD	RISK
TOTAL	0.0000027382	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000027382	0.00000000000000E+0

CHEMICAL - NAPHTHALENE

MEDIA	HAZARD	RISK
TOTAL	0.0007079683	2.59000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0007079683	2.59000000000000E-8

CHEMICAL - BENZ(A)ANTHRACENE

MEDIA	HAZARD	RISK
TOTAL	0.0000000000	1.06000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0000000000	1.06000000000000E-8

CHEMICAL - BIS(2-ETHYLHEXYL)PHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0000180081	1.80000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0000180081	1.80000000000000E-9

CHEMICAL - DIBUTYLPHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0001406699	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0001406699	0.00000000000000E+0

CHEMICAL - SELENIUM

MEDIA	HAZARD	RISK
TOTAL	0.0000702881	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000702881	0.00000000000000E+0

CHEMICAL - SILVER AND COMPOUNDS

MEDIA	HAZARD	RISK
TOTAL	0.0000325342	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000325342	0.00000000000000E+0

CHEMICAL - DIOXIN

MEDIA	HAZARD	RISK
TOTAL	0.0008274959	4.11300000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0008274959	4.11300000000000E-7

CHEMICAL - PERCHLORATE

MEDIA	HAZARD	RISK
TOTAL	0.0000068004	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000068004	0.00000000000000E+0

CHEMICAL - 3,3'-DIMETHYLBENZIDINE

MEDIA	HAZARD	RISK
TOTAL	0.0000000000	1.26248000000000E-5
SOIL INGESTION/CONTACT/INHALATION	0.0000000000	1.26248000000000E-5

********** HAZARD/RISK RESULTS BY MEDIA **********

SOIL INGESTION - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000360274	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0004614726	1.02200000000000E-7
2,6-DINITROTOLUENE	0.0003578767	1.91700000000000E-7
2,4,6-TRINITROTOLUENE	0.0003732877	2.00000000000000E-9
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000051541	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0015068493	1.77600000000000E-7
NITROGLYCERINE	0.1730308219	1.05100000000000E-7
DIETHYLPHTHALATE	0.0000005661	0.00000000000000E+0
FLUORANTHENE	0.0000017765	0.00000000000000E+0
NAPHTHALENE	0.0000007620	1.00000000000000E-10

BENZ(A)ANTHRACENE	0.0000000000	6.00000000000001E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000127140	1.30000000000000E-9
DIBUTYLPHTHALATE	0.0000993151	0.00000000000000E+0
SELENIUM	0.0000702055	0.00000000000000E+0
SILVER AND COMPOUNDS	0.0000325342	0.00000000000000E+0
DIOXIN	0.0004296233	1.99500000000000E-7
PERCHLORATE	0.0000068004	0.00000000000000E+0
3,3'-DIMETHYLBENZIDINE	0.0000000000	8.91330000000002E-6

SOIL CONTACT - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000150018	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0001921572	4.25000000000000E-8
2,6-DINITROTOLUENE	0.0001475297	7.90000000000002E-8
2,4,6-TRINITROTOLUENE	0.0000497398	3.00000000000000E-10
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000001288	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0000941178	1.11000000000000E-8
NITROGLYCERINE	0.0720500342	4.37000000000001E-8
DIETHYLPHTHALATE	0.0000000236	0.00000000000000E+0
FLUORANTHENE	0.0000009617	0.00000000000000E+0
NAPHTHALENE	0.0000004125	1.00000000000000E-10
BENZ(A)ANTHRACENE	0.0000000000	3.30000000000000E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000052941	5.00000000000000E-10
DIBUTYLPHTHALATE	0.0000413548	0.00000000000000E+0
DIOXIN	0.0000536685	2.49000000000000E-8
3,3'-DIMETHYLBENZIDINE	0.0000000000	3.71150000000000E-6

AIR INHALATION VIA SOIL - COMMERCIAL

CHEMICAL	HAZARD	RISK
2,4-DINITROTOLUENE	0.0000000000	1.00000000000000E-10
MERCURY (INORGANIC)	0.0131509750	0.00000000000000E+0
NAPHTHALENE	0.0007067938	2.57000000000000E-8
BENZ(A)ANTHRACENE	0.0000000000	1.30000000000000E-9
SELENIUM	0.0000000826	0.00000000000000E+0
DIOXIN	0.0003442041	1.86900000000000E-7

********** ACCEPTABLE CONCENTRATIONS **********

	CONCENTRATIONS (mg/Kg) or (mg/L)	
MEDIA	INITIAL	ACCEPTABLE
CHEMICAL: Arsenic		
Soil, Non-carcinogenic	0.0000000000	0.0000000000

Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Chromium III and compounds		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Chromium(VI)		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Diphenylamine		
Soil, Non-carcinogenic	1.0520000000	20615.6475116208
Soil, Carcinogenic	1.0520000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000

Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,4-Dinitrotoluene		
Soil, Non-carcinogenic	1.0780000000	1649.2516100092
Soil, Carcinogenic	1.0780000000	7.4447513812
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,6-Dinitrotoluene		
Soil, Non-carcinogenic	0.4180000000	827.0571959516
Soil, Carcinogenic	0.4180000000	1.5441448098
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,4,6-Trinitrotoluene		
Soil, Non-carcinogenic	0.2180000000	515.3329275284
Soil, Carcinogenic	0.2180000000	94.7826086957
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000

Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Octahydro-1357-tetranitro-1357-tetrazocine (HMX)

Soil, Non-carcinogenic	0.3010000000	56976.2819663442
Soil, Carcinogenic	0.3010000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)

Soil, Non-carcinogenic	5.2800000000	3298.0065611592
Soil, Carcinogenic	5.2800000000	27.9809220986
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Nitroglycerine

Soil, Non-carcinogenic	20.2100000000	82.4625812134
Soil, Carcinogenic	20.2100000000	135.8198924731
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000

Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Mercury (inorganic)		
Soil, Non-carcinogenic	0.0216000000	1.6424637717
Soil, Carcinogenic	0.0216000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Diethylphthalate		
Soil, Non-carcinogenic	0.5290000000	897066.304900797
Soil, Carcinogenic	0.5290000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Dimethylphthalate		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000

Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Fluoranthene		
Soil, Non-carcinogenic	0.0830000000	30311.8837192316
Soil, Carcinogenic	0.0830000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Naphthalene		
Soil, Non-carcinogenic	0.0178000000	25.1423686626
Soil, Carcinogenic	0.0178000000	0.6872586873
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Benz(a)anthracene		
Soil, Non-carcinogenic	0.0270000000	0.0000000000
Soil, Carcinogenic	0.0270000000	2.5471698113
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Bis(2-ethylhexyl)phthalate		

Soil, Non-carcinogenic	0.2970000000	16492.5783397471
Soil, Carcinogenic	0.2970000000	165.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Dibutylphthalate

Soil, Non-carcinogenic	11.6000000000	82462.5595098880
Soil, Carcinogenic	11.6000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Selenium

Soil, Non-carcinogenic	0.4100000000	5833.1353386989
Soil, Carcinogenic	0.4100000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Barium and compounds

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000

Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Silver and compounds		
Soil, Non-carcinogenic	0.1900000000	5840.0083604330
Soil, Carcinogenic	0.1900000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Cadmium and compounds		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Dioxin		
Soil, Non-carcinogenic	0.0000050180	0.0060640784
Soil, Carcinogenic	0.0000050180	0.0000122003
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000

Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Perchlorate		
Soil, Non-carcinogenic	0.0055600000	817.5989647668
Soil, Carcinogenic	0.0055600000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 3,3'-Dimethylbenzidine		
Soil, Non-carcinogenic	2.6500000000	0.0000000000
Soil, Carcinogenic	2.6500000000	0.2099043153
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

********** CALCULATION ALGORITHMS **********

********** Hazard/Risk Associated with INGESTION via SOIL **********

Using the following Calculation :

$$CS \times IR \times CF \times EF \times ED$$

$$\text{Intake (mg/Kg-day)} = \frac{\text{CS} \times \text{IR} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

where :

CS is the Chemical Concentration in the Soil (mg/kg)
IR is the Ingestion Rate (mgsoil/day)
CF is the Conversion Factor (10 ^ -6 Kg/mg)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
IR	200.00	114.28; 489.50(M)	100.00	100.00
CF	0.000001	0.000001	0.000001	0.000001
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SOIL **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{\text{CS} \times \text{CF} \times \text{ABS} \times \text{EF} \times (\text{ED} \times \text{SA} \times \text{AF}) \times \text{DFSadj}}{\text{BW} \times \text{AT}}$$

where :

CS is the Chemical Concentration in the Soil (mg/kg)
CF is the Conversion Factor (10 ^ -6 Kg/mg)
SA is the Skin Surface Area for Contact (cm^2/event)
AF is the Soil to Skin Adherence Factor (unitless)
ABS is the Absorption Factor (unitless)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years)
DFS is the Residential soil dermal contact factor (mg-year/kg-day)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)
(RfDo modified for dermal exposure: RfDo x gastrointestinal absorption factor; CSFo modified for dermal exposure: CSFo/gastrointestinal absorption factor)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC

CS	User Defined	User Defined	User Defined	User Defined
CF	0.000001	0.000001	0.000001	0.000001
SA	2800	Incl. in DFSadj.	3470	3470
AF	0.12	0.07	0.12	0.12
ABS	User Defined	User Defined	User Defined	User Defined
EF	350	350	250	250
ED	6	Incl. in DFSadj.	25	25
DFSadj	Not Used	361; 1445 (M)	25	25
BW	15	Incl. in DFSadj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

******** Hazard/Risk Associated with INHALATION OF PARTICULATES via SOIL *********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times ET \times EF \times ED \times [(1/VF) + (1/PEF)] \times CF}{AT}$$

where :
CS is the Chemical Concentration in the Soil (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
VF is the Volatilization factor (m^3/Kg)
PEF is the Particulate Emission Factor (m^3/Kg)
AT is the Averaging Time (days)
CF is used only for carcinogenic calculation (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age-adj (M)	25	25
VF	0.5	0.5	0.5	0.5
PEF	1.36E+9	1.36E+9	1.36E+9	1.36E+9
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via SOIL **********

Using the following Calculation :

Ingestion:
Intake (mg/Kg-day) = CS x (((EF x IF x CF1)/AT)+((IR x CF)/BW)))

Inhalation:
Intake (mg/Kg-day) = CS x (((EF x ED x ET x CF2)/AT x VF)+((CF2)/VF)))

Dermal:
Intake (mg/Kg-day) = CS x (((EF x DFS x ABS x CF1)/AT)+((SA x AF x ABS x CF1)/BW)))

where :
CS is the Chemical Concentration in the Soil (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
IFS is the adjusted soil ingestion rate (mg-yr/kg-d)
IRS is the soil ingestion rate (mg/day)
DFS is the adjusted soil dermal contact factor (mg-yr/kg-d)
ABS is the absorption factor
AF is the adherence factor (mg/cm2)
BW is the body weight (kg)
VF is the volatilization factor (m^3/kg)
AT is the Averaging Time (days)
CF1 is the conversion factor (kg/mg)
CF2 is the conversion factor (µg/mg)

RESIDENTIAL CARCINOGENIC	
CS	User Defined
ET	1.00
EF	350
ED	30
IFS	114.28
IRS	200.00
DFS	361
ABS	User Defined
AF	0.12
BW	15
VF	0.5
AT	365 x 6
CF1	0.000001
CF2	1000

********** Hazard/Risk Associated with DRINKING WELL WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

where :
 CW is the Chemical Concentration in Water (mg/L)
 IR is the Ingestion Rate (Liters/day)
 EF is the Exposure Frequency (days/year)
 ED is the Exposure Duration (years)
 BW is the Body Weight (Kg)
 AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
IR	1.00	1.09; 3.39(M)	2.00	2.00
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********
Using the following Calculation :

Ingestion:
 Intake (mg/Kg-day) = CW x (((EF x IF)/AT)+(IR/BW)))

where :
 CW is the Chemical Concentration in the Groundwater (mg/kg)
 EF is the Exposure Frequency (day/years)
 IF is the adjusted water ingestion rate (L-yr/kg-d)
 IR is the water ingestion rate (L/day)
 BW is the body weight (kg)
 AT is the Averaging Time (days)

	RESIDENTIAL CARCINOGENIC
CW	User Defined
EF	350
IF	1.086
IR	1.00
BW	15
AT	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via WELL WATER **********

Using the following Calculation :

$$\text{Intake} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
PC is the Dermal Permeability Constant (cm/hr)
SA is the Surface Area Exposed (cm^2)
ET is the Exposure Time (hours/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
CF is the Volumetric Conversion (1 Liter/1000 cm^3)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	0.2	0.2	1.0	1.0
EF	350	350	250	250
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********* Hazard/Risk Associated with INCIDENTAL INGESTION via SWIMMING **********

Using the following Calculation :

$$\text{Intake (mg/Kg/day)} = \frac{CW \times CR \times EF \times ET \times ED}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
CR is the Contact Rate (Liters/hour)
EF is the Exposure Frequency (events/year)
ET is the Exposure Time (hours/event)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)

AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
CR	0.05	.037	0.05	0.05
EF	7	7	7	7
ET	2.6	2.6	2.6	2.6
ED	6	Incl. in CR Adj.	25	25
BW	15	Incl. in CR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SURFACE WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :
 CW is the Chemical Concentration in Water (mg/L)
 PC is the Dermal Permeability Constant (cm/hr)
 SA is the Surface Area Exposed (cm^2)
 ET is the Exposure Time (hours/day)
 EF is the Exposure Frequency (days/year)
 ED is the Exposure Duration (years)
 CF is the Volumetric Conversion (1 Liter/1000 cm^3)
 BW is the Body Weight (Kg)
 AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	2.6	2.6	2.6	2.6
EF	7	7	7	7
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with INHALATION via AIR **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CA \times ET \times EF \times ED}{AT \times CF}$$

where :
CA is the Chemical Concentration in Air (mg/m^3)
ET is the Exposure Time (hours/hour)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CA	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age adj. (M)	25	25
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via AIR **********

Using the following Calculation :

Inhalation:
Intake (mg/Kg-day) = (CA x ((EF x ED x ET)/AT)))/CF

where :
CA is the Chemical Concentration in the Air (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

RESIDENTIAL
CARCINOGENIC

CW User Defined
ET 1.00
EF 350
ED 30
AT 365 x 70
CF 1000
    |------------------|

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********

Using the following Calculation :

Inhalation:
 Intake (mg/Kg-day) = (CW x (((EF x ED x ET x VF)/AT)+(VF)))/CF

where :
CW is the Chemical Concentration in the Groundwater (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
VF is the volatilization factor (L/m^3)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

    |------------------|
    | RESIDENTIAL |
CARCINOGENIC
CW User Defined
ET 1.00
EF 350
ED 30
VF 0.5
AT 365 x 70
CF 1000
    |------------------|

********** Hazard/Risk Associated with INGESTION of FOOD PRODUCTS **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CF \times IR \times FI \times EF \times ED}{BW \times AT}$$

where :
 CF is the Chemical Concentration in the Food (mg/Kg)
 IR is the Ingestion Rate (kg/day)
 FI is the Fraction Ingested from the Contaminated Source
 EF is the Exposure Frequency (meals/year)

ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

MEAT/EGG/DAIRY PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.280	0.280	0.280	0.280
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FRUIT/VEGETABLE PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.122	0.122	0.122	0.122
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FISH/SHELLFISH PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.054	0.054	0.054	0.054
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

****
*→

09/22/2015
15:23:00
OUTPUT FILE - C:\REAMS\OBG2.OUT
RISK EXPOSURE DEFAULT FILE USED - SYSTEM DEFAULTS
SETUP DEFAULT FILE USED - OBG RISK ASSESSMENT
FILE PARAMETER DEFAULT FILE USED - SYSTEM DEFAULTS

****
RISK ANALYSIS RESULTS
****

****
****
** **
** TOTAL EXPOSURE RISK : 2.4673000E-6 **
** TOTAL HAZARD INDEX : 0.2632804982 **
** **
****
****

********** TOTAL PATHWAY RISKS **********

MEDIA	HAZARD	RISK
SOIL	0.2632804982	2.4673000E-6
GROUND WATER	0.0000000000	0.0000000E+0
SURFACE WATER	0.0000000000	0.0000000E+0
FOOD	0.0000000000	0.0000000E+0
AIR	0.0000000000	0.0000000E+0

********** HAZARD/RISK RESULTS BY CHEMICAL **********

COMMERCIAL

CHEMICAL - DIPHENYLAMINE

MEDIA	HAZARD	RISK
TOTAL	0.0000510292	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000510292	0.00000000000000E+0

CHEMICAL - 2,4-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0006558014	1.44800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0006558014	1.44800000000000E-7

CHEMICAL - 2,6-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0005054064	2.70700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0005054064	2.70700000000000E-7

CHEMICAL - 2,4,6-TRINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0004230275	2.30000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0004230275	2.30000000000000E-9

CHEMICAL - OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCINE (HMX)

MEDIA	HAZARD	RISK
TOTAL	0.0000052829	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000052829	0.00000000000000E+0

CHEMICAL - HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)

MEDIA	HAZARD	RISK
TOTAL	0.0016009671	1.88700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0016009671	1.88700000000000E-7

CHEMICAL - NITROGLYCERINE

MEDIA	HAZARD	RISK
TOTAL	0.2450808561	1.48800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.2450808561	1.48800000000000E-7

CHEMICAL - MERCURY (INORGANIC)

MEDIA	HAZARD	RISK
TOTAL	0.0131509750	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0131509750	0.00000000000000E+0

CHEMICAL - DIETHYLPHTHALATE

MEDIA	HAZARD	RISK

TOTAL	0.0000005897	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000005897	0.00000000000000E+0

CHEMICAL - FLUORANTHENE

MEDIA	HAZARD	RISK
TOTAL	0.0000027382	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000027382	0.00000000000000E+0

CHEMICAL - NAPHTHALENE

MEDIA	HAZARD	RISK
TOTAL	0.0007079683	2.59000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0007079683	2.59000000000000E-8

CHEMICAL - BENZ(A)ANTHRACENE

MEDIA	HAZARD	RISK
TOTAL	0.0000000000	1.06000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0000000000	1.06000000000000E-8

CHEMICAL - BIS(2-ETHYLHEXYL)PHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0000180679	1.80000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0000180679	1.80000000000000E-9

CHEMICAL - DIBUTYLPHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0001406699	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0001406699	0.00000000000000E+0

CHEMICAL - SELENIUM

MEDIA	HAZARD	RISK
TOTAL	0.0000702881	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000702881	0.00000000000000E+0

CHEMICAL - SILVER AND COMPOUNDS

MEDIA	HAZARD	RISK
TOTAL	0.0000325342	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000325342	0.00000000000000E+0

CHEMICAL - DIOXIN

MEDIA	HAZARD	RISK
TOTAL	0.0008274959	4.11300000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0008274959	4.11300000000000E-7

CHEMICAL - PERCHLORATE

MEDIA	HAZARD	RISK
TOTAL	0.0000068004	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000068004	0.00000000000000E+0

CHEMICAL - 3,3'-DIMETHYLBENZIDINE

MEDIA	HAZARD	RISK
TOTAL	0.0000000000	1.26240000000000E-6
SOIL INGESTION/CONTACT/INHALATION	0.0000000000	1.26240000000000E-6

********** HAZARD/RISK RESULTS BY MEDIA **********

SOIL INGESTION - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000360274	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0004614726	1.02200000000000E-7
2,6-DINITROTOLUENE	0.0003578767	1.91700000000000E-7
2,4,6-TRINITROTOLUENE	0.0003732877	2.00000000000000E-9
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000051541	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0015068493	1.77600000000000E-7
NITROGLYCERINE	0.1730308219	1.05100000000000E-7
DIETHYLPHTHALATE	0.0000005661	0.00000000000000E+0
FLUORANTHENE	0.0000017765	0.00000000000000E+0
NAPHTHALENE	0.0000007620	1.00000000000000E-10

BENZ(A)ANTHRACENE	0.0000000000	6.00000000000001E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000127140	1.30000000000000E-9
DIBUTYLPHTHALATE	0.0000993151	0.00000000000000E+0
SELENIUM	0.0000702055	0.00000000000000E+0
SILVER AND COMPOUNDS	0.0000325342	0.00000000000000E+0
DIOXIN	0.0004296233	1.99500000000000E-7
PERCHLORATE	0.0000068004	0.00000000000000E+0
3,3'-DIMETHYLBENZIDINE	0.0000000000	8.91300000000001E-7

SOIL CONTACT - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000150018	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0001921572	4.25000000000000E-8
2,6-DINITROTOLUENE	0.0001475297	7.90000000000002E-8
2,4,6-TRINITROTOLUENE	0.0000497398	3.00000000000000E-10
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000001288	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0000941178	1.11000000000000E-8
NITROGLYCERINE	0.0720500342	4.37000000000001E-8
DIETHYLPHTHALATE	0.0000000236	0.00000000000000E+0
FLUORANTHENE	0.0000009617	0.00000000000000E+0
NAPHTHALENE	0.0000004125	1.00000000000000E-10
BENZ(A)ANTHRACENE	0.0000000000	3.30000000000000E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000052941	5.00000000000000E-10
DIBUTYLPHTHALATE	0.0000413548	0.00000000000000E+0
DIOXIN	0.0000536685	2.49000000000000E-8
3,3'-DIMETHYLBENZIDINE	0.0000000000	3.71100000000000E-7

AIR INHALATION VIA SOIL - COMMERCIAL

CHEMICAL	HAZARD	RISK
2,4-DINITROTOLUENE	0.0000021716	1.00000000000000E-10
MERCURY (INORGANIC)	0.0131509750	0.00000000000000E+0
NAPHTHALENE	0.0007067938	2.57000000000000E-8
BENZ(A)ANTHRACENE	0.0000000000	1.30000000000000E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000000598	0.00000000000000E+0
SELENIUM	0.0000000826	0.00000000000000E+0
DIOXIN	0.0003442041	1.86900000000000E-7

********** ACCEPTABLE CONCENTRATIONS **********

	CONCENTRATIONS (mg/Kg) or (mg/L)	
MEDIA	INITIAL	ACCEPTABLE

CHEMICAL: Arsenic

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Chromium III and compounds

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Chromium(VI)

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Diphenylamine

Soil, Non-carcinogenic	1.0520000000	20615.6475116208
Soil, Carcinogenic	1.0520000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000

Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,4-Dinitrotoluene		
Soil, Non-carcinogenic	1.0780000000	1643.7903304263
Soil, Carcinogenic	1.0780000000	7.4447513812
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,6-Dinitrotoluene		
Soil, Non-carcinogenic	0.4180000000	827.0571959516
Soil, Carcinogenic	0.4180000000	1.5441448098
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: 2,4,6-Trinitrotoluene		
Soil, Non-carcinogenic	0.2180000000	515.3329275284
Soil, Carcinogenic	0.2180000000	94.7826086957
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000

Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Octahydro-1357-tetranitro-1357-tetrazocine (HMX)

Soil, Non-carcinogenic	0.3010000000	56976.2819663442
Soil, Carcinogenic	0.3010000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)

Soil, Non-carcinogenic	5.2800000000	3298.0065611592
Soil, Carcinogenic	5.2800000000	27.9809220986
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Nitroglycerine

Soil, Non-carcinogenic	20.2100000000	82.4625812134
Soil, Carcinogenic	20.2100000000	135.8198924731
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000

Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Mercury (inorganic)		
Soil, Non-carcinogenic	0.0216000000	1.6424637717
Soil, Carcinogenic	0.0216000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Diethylphthalate		
Soil, Non-carcinogenic	0.5290000000	897066.304900797
Soil, Carcinogenic	0.5290000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Dimethylphthalate		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000

Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Fluoranthene		
Soil, Non-carcinogenic	0.0830000000	30311.8837192316
Soil, Carcinogenic	0.0830000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Naphthalene		
Soil, Non-carcinogenic	0.0178000000	25.1423686626
Soil, Carcinogenic	0.0178000000	0.6872586873
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Benz(a)anthracene		
Soil, Non-carcinogenic	0.0270000000	0.0000000000
Soil, Carcinogenic	0.0270000000	2.5471698113
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Bis(2-ethylhexyl)phthalate

Soil, Non-carcinogenic	0.2970000000	16437.9922403821
Soil, Carcinogenic	0.2970000000	165.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Dibutylphthalate

Soil, Non-carcinogenic	11.6000000000	82462.5595098880
Soil, Carcinogenic	11.6000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Selenium

Soil, Non-carcinogenic	0.4100000000	5833.1353386989
Soil, Carcinogenic	0.4100000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Barium and compounds

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000

Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Silver and compounds

Soil, Non-carcinogenic	0.1900000000	5840.0083604330
Soil, Carcinogenic	0.1900000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Cadmium and compounds

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Dioxin

Soil, Non-carcinogenic	0.0000050180	0.0060640784
Soil, Carcinogenic	0.0000050180	0.0000122003
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000

Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Perchlorate

Soil, Non-carcinogenic	0.0055600000	817.5989647668
Soil, Carcinogenic	0.0055600000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: 3,3'-Dimethylbenzidine

Soil, Non-carcinogenic	0.2650000000	0.0000000000
Soil, Carcinogenic	0.2650000000	0.2099176172
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

********** CALCULATION ALGORITHMS **********

********** Hazard/Risk Associated with INGESTION via SOIL **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times IR \times CF \times EF \times ED}{BW \times AT}$$

where :
 CS is the Chemical Concentration in the Soil (mg/kg)
 IR is the Ingestion Rate (mgsoil/day)
 CF is the Conversion Factor (10 ^ -6 Kg/mg)
 EF is the Exposure Frequency (day/years)
 ED is the Exposure Duration (years)
 BW is the Body Weight (Kg)
 AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
IR	200.00	114.28; 489.50(M)	100.00	100.00
CF	0.000001	0.000001	0.000001	0.000001
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SOIL **********

 Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times CF \times ABS \times EF \times (ED \times SA \times AF) \times DFSadj}{BW \times AT}$$

where :
 CS is the Chemical Concentration in the Soil (mg/kg)
 CF is the Conversion Factor (10 ^ -6 Kg/mg)
 SA is the Skin Surface Area for Contact (cm^2/event)
 AF is the Soil to Skin Adherence Factor (unitless)
 ABS is the Absorption Factor (unitless)
 EF is the Exposure Frequency (day/years)
 ED is the Exposure Duration (years)
 DFS is the Residential soil dermal contact factor (mg-year/kg-day)
 BW is the Body Weight (Kg)
 AT is the Averaging Time (days)
 (RfDo modified for dermal exposure: RfDo x gastrointestinal absorption factor; CSFo modified for dermal exposure: CSFo/gastrointestinal absorption factor)

	RESIDENTIAL	COMMERCIAL

	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
CF	0.000001	0.000001	0.000001	0.000001
SA	2800	Incl. in DFSadj.	3470	3470
AF	0.12	0.07	0.12	0.12
ABS	User Defined	User Defined	User Defined	User Defined
EF	350	350	250	250
ED	6	Incl. in DFSadj.	25	25
DFSadj	Not Used	361; 1445 (M)	25	25
BW	15	Incl. in DFSadj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

******** Hazard/Risk Associated with INHALATION OF PARTICULATES via SOIL *********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times ET \times EF \times ED \times [(1/VF) + (1/PEF)] \times CF}{AT}$$

where :
CS is the Chemical Concentration in the Soil (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
VF is the Volatilization factor (m^3/Kg)
PEF is the Particulate Emission Factor (m^3/Kg)
AT is the Averaging Time (days)
CF is used only for carcinogenic calculation (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age-adj (M)	25	25
VF	0.5	0.5	0.5	0.5
PEF	1.36E+9	1.36E+9	1.36E+9	1.36E+9
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via SOIL **********

Using the following Calculation :

Ingestion:
Intake (mg/Kg-day) = CS x (((EF x IF x CF1)/AT)+((IR x CF)/BW)))

Inhalation:
Intake (mg/Kg-day) = CS x (((EF x ED x ET x CF2)/AT x VF)+((CF2)/VF)))

Dermal:
Intake (mg/Kg-day) = CS x (((EF x DFS x ABS x CF1)/AT)+((SA x AF x ABS x CF1)/BW)))

where :
CS is the Chemical Concentration in the Soil (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
IFS is the adjusted soil ingestion rate (mg-yr/kg-d)
IRS is the soil ingestion rate (mg/day)
DFS is the adjusted soil dermal contact factor (mg-yr/kg-d)
ABS is the absorption factor
AF is the adherence factor (mg/cm2)
BW is the body weight (kg)
VF is the volatilization factor (m^3/kg)
AT is the Averaging Time (days)
CF1 is the conversion factor (kg/mg)
CF2 is the conversion factor (µg/mg)

RESIDENTIAL CARCINOGENIC	
CS	User Defined
ET	1.00
EF	350
ED	30
IFS	114.28
IRS	200.00
DFS	361
ABS	User Defined
AF	0.12
BW	15
VF	0.5
AT	365 x 6
CF1	0.000001
CF2	1000

********** Hazard/Risk Associated with DRINKING WELL WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
IR is the Ingestion Rate (Liters/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
IR	1.00	1.09; 3.39(M)	2.00	2.00
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********
Using the following Calculation :

Ingestion:
Intake (mg/Kg-day) = CW x (((EF x IF)/AT)+(IR/BW)))

where :
CW is the Chemical Concentration in the Groundwater (mg/kg)
EF is the Exposure Frequency (day/years)
IF is the adjusted water ingestion rate (L-yr/kg-d)
IR is the water ingestion rate (L/day)
BW is the body weight (kg)
AT is the Averaging Time (days)

	RESIDENTIAL
	CARCINOGENIC
CW	User Defined
EF	350
IF	1.086
IR	1.00
BW	15
AT	365 x 70

|------------------|

********** Hazard/Risk Associated with DERMAL CONTACT via WELL WATER **********

Using the following Calculation :

$$\text{Intake} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
PC is the Dermal Permeability Constant (cm/hr)
SA is the Surface Area Exposed (cm^2)
ET is the Exposure Time (hours/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
CF is the Volumetric Conversion (1 Liter/1000 cm^3)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	0.2	0.2	1.0	1.0
EF	350	350	250	250
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********* Hazard/Risk Associated with INCIDENTAL INGESTION via SWIMMING **********

Using the following Calculation :

$$\text{Intake (mg/Kg/day)} = \frac{CW \times CR \times EF \times ET \times ED}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
CR is the Contact Rate (Liters/hour)
EF is the Exposure Frequency (events/year)
ET is the Exposure Time (hours/event)
ED is the Exposure Duration (years)

BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
CR	0.05	.037	0.05	0.05
EF	7	7	7	7
ET	2.6	2.6	2.6	2.6
ED	6	Incl. in CR Adj.	25	25
BW	15	Incl. in CR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SURFACE WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
PC is the Dermal Permeability Constant (cm/hr)
SA is the Surface Area Exposed (cm^2)
ET is the Exposure Time (hours/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
CF is the Volumetric Conversion (1 Liter/1000 cm^3)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	2.6	2.6	2.6	2.6
EF	7	7	7	7
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with INHALATION via AIR **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CA \times ET \times EF \times ED}{AT \times CF}$$

where :
CA is the Chemical Concentration in Air (mg/m^3)
ET is the Exposure Time (hours/hour)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CA	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age adj. (M)	25	25
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via AIR **********

Using the following Calculation :

Inhalation:
Intake (mg/Kg-day) = (CA x ((EF x ED x ET)/AT)))/CF

where :
CA is the Chemical Concentration in the Air (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

RESIDENTIAL
CARCINOGENIC

```
    |------------------|
CW   User Defined
ET    1.00
EF   350
ED   30
AT   365 x 70
CF   1000
    |------------------|
```

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********

Using the following Calculation :

Inhalation:
Intake (mg/Kg-day) = (CW x (((EF x ED x ET x VF)/AT)+(VF)))/CF

where :
CW is the Chemical Concentration in the Groundwater (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
VF is the volatilization factor (L/m^3)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

```
    |------------------|
    | RESIDENTIAL      |
    | CARCINOGENIC     |
    | ---------------- |
CW    User Defined
ET     1.00
EF    350
ED    30
VF    0.5
AT    365 x 70
CF    1000
    |------------------|
```

********** Hazard/Risk Associated with INGESTION of FOOD PRODUCTS **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CF \times IR \times FI \times EF \times ED}{BW \times AT}$$

where :
CF is the Chemical Concentration in the Food (mg/Kg)
IR is the Ingestion Rate (kg/day)
FI is the Fraction Ingested from the Contaminated Source

EF is the Exposure Frequency (meals/year)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

MEAT/EGG/DAIRY PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.280	0.280	0.280	0.280
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FRUIT/VEGETABLE PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.122	0.122	0.122	0.122
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FISH/SHELLFISH PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.054	0.054	0.054	0.054
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

****
*→

09/22/2015
15:23:48
OUTPUT FILE - C:\REAMS\OBG3.OUT
RISK EXPOSURE DEFAULT FILE USED - SYSTEM DEFAULTS
SETUP DEFAULT FILE USED - OBG RISK ASSESSMENT
FILE PARAMETER DEFAULT FILE USED - SYSTEM DEFAULTS

****
RISK ANALYSIS RESULTS
****

****
****
** **
** TOTAL EXPOSURE RISK : 1.2049000E-6 **
** TOTAL HAZARD INDEX : 0.2632804982 **
** **
****
****

********** TOTAL PATHWAY RISKS **********

MEDIA	HAZARD	RISK
SOIL	0.2632804982	1.2049000E-6
GROUND WATER	0.0000000000	0.0000000E+0
SURFACE WATER	0.0000000000	0.0000000E+0
FOOD	0.0000000000	0.0000000E+0
AIR	0.0000000000	0.0000000E+0

********** HAZARD/RISK RESULTS BY CHEMICAL **********

COMMERCIAL

CHEMICAL - DIPHENYLAMINE

MEDIA	HAZARD	RISK
TOTAL	0.0000510292	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000510292	0.00000000000000E+0

CHEMICAL - 2,4-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0006558014	1.44800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0006558014	1.44800000000000E-7

CHEMICAL - 2,6-DINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0005054064	2.70700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0005054064	2.70700000000000E-7

CHEMICAL - 2,4,6-TRINITROTOLUENE

MEDIA	HAZARD	RISK
TOTAL	0.0004230275	2.30000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0004230275	2.30000000000000E-9

CHEMICAL - OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCINE (HMX)

MEDIA	HAZARD	RISK
TOTAL	0.0000052829	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000052829	0.00000000000000E+0

CHEMICAL - HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE (RDX)

MEDIA	HAZARD	RISK
TOTAL	0.0016009671	1.88700000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0016009671	1.88700000000000E-7

CHEMICAL - NITROGLYCERINE

MEDIA	HAZARD	RISK
TOTAL	0.2450808561	1.48800000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.2450808561	1.48800000000000E-7

CHEMICAL - MERCURY (INORGANIC)

MEDIA	HAZARD	RISK
TOTAL	0.0131509750	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0131509750	0.00000000000000E+0

CHEMICAL - DIETHYLPHTHALATE

MEDIA	HAZARD	RISK

TOTAL	0.0000005897	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000005897	0.00000000000000E+0

CHEMICAL - FLUORANTHENE

MEDIA	HAZARD	RISK
TOTAL	0.0000027382	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000027382	0.00000000000000E+0

CHEMICAL - NAPHTHALENE

MEDIA	HAZARD	RISK
TOTAL	0.0007079683	2.59000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0007079683	2.59000000000000E-8

CHEMICAL - BENZ(A)ANTHRACENE

MEDIA	HAZARD	RISK
TOTAL	0.0000000000	1.06000000000000E-8
SOIL INGESTION/CONTACT/INHALATION	0.0000000000	1.06000000000000E-8

CHEMICAL - BIS(2-ETHYLHEXYL)PHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0000180679	1.80000000000000E-9
SOIL INGESTION/CONTACT/INHALATION	0.0000180679	1.80000000000000E-9

CHEMICAL - DIBUTYLPHTHALATE

MEDIA	HAZARD	RISK
TOTAL	0.0001406699	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0001406699	0.00000000000000E+0

CHEMICAL - SELENIUM

MEDIA	HAZARD	RISK
TOTAL	0.0000702881	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000702881	0.00000000000000E+0

CHEMICAL - SILVER AND COMPOUNDS

MEDIA	HAZARD	RISK
TOTAL	0.0000325342	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000325342	0.00000000000000E+0

CHEMICAL - DIOXIN

MEDIA	HAZARD	RISK
TOTAL	0.0008274959	4.11300000000000E-7
SOIL INGESTION/CONTACT/INHALATION	0.0008274959	4.11300000000000E-7

CHEMICAL - PERCHLORATE

MEDIA	HAZARD	RISK
TOTAL	0.0000068004	0.00000000000000E+0
SOIL INGESTION/CONTACT/INHALATION	0.0000068004	0.00000000000000E+0

********** HAZARD/RISK RESULTS BY MEDIA **********

SOIL INGESTION - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000360274	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0004614726	1.02200000000000E-7
2,6-DINITROTOLUENE	0.0003578767	1.91700000000000E-7
2,4,6-TRINITROTOLUENE	0.0003732877	2.00000000000000E-9
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000051541	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0015068493	1.77600000000000E-7
NITROGLYCERINE	0.1730308219	1.05100000000000E-7
DIETHYLPHTHALATE	0.0000005661	0.00000000000000E+0
FLUORANTHENE	0.0000017765	0.00000000000000E+0
NAPHTHALENE	0.0000007620	1.00000000000000E-10
BENZ(A)ANTHRACENE	0.0000000000	6.00000000000001E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000127140	1.30000000000000E-9
DIBUTYLPHTHALATE	0.0000993151	0.00000000000000E+0
SELENIUM	0.0000702055	0.00000000000000E+0
SILVER AND COMPOUNDS	0.0000325342	0.00000000000000E+0
DIOXIN	0.0004296233	1.99500000000000E-7
PERCHLORATE	0.0000068004	0.00000000000000E+0

SOIL CONTACT - COMMERCIAL

CHEMICAL	HAZARD	RISK
DIPHENYLAMINE	0.0000150018	0.00000000000000E+0
2,4-DINITROTOLUENE	0.0001921572	4.25000000000000E-8
2,6-DINITROTOLUENE	0.0001475297	7.90000000000002E-8
2,4,6-TRINITROTOLUENE	0.0000497398	3.00000000000000E-10
OCTAHYDRO-1357-TETRANITRO-1357-TETRAZOCI	0.0000001288	0.00000000000000E+0
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	0.0000941178	1.11000000000000E-8
NITROGLYCERINE	0.0720500342	4.37000000000001E-8
DIETHYLPHTHALATE	0.0000000236	0.00000000000000E+0
FLUORANTHENE	0.0000009617	0.00000000000000E+0
NAPHTHALENE	0.0000004125	1.00000000000000E-10
BENZ(A)ANTHRACENE	0.0000000000	3.30000000000000E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000052941	5.00000000000000E-10
DIBUTYLPHTHALATE	0.0000413548	0.00000000000000E+0
DIOXIN	0.0000536685	2.49000000000000E-8

AIR INHALATION VIA SOIL - COMMERCIAL

CHEMICAL	HAZARD	RISK
2,4-DINITROTOLUENE	0.0000021716	1.00000000000000E-10
MERCURY (INORGANIC)	0.0131509750	0.00000000000000E+0
NAPHTHALENE	0.0007067938	2.57000000000000E-8
BENZ(A)ANTHRACENE	0.0000000000	1.30000000000000E-9
BIS(2-ETHYLHEXYL)PHTHALATE	0.0000000598	0.00000000000000E+0
SELENIUM	0.0000000826	0.00000000000000E+0
DIOXIN	0.0003442041	1.86900000000000E-7

********** ACCEPTABLE CONCENTRATIONS **********

MEDIA	CONCENTRATIONS (mg/Kg) or (mg/L)	
	INITIAL	ACCEPTABLE
CHEMICAL: Arsenic		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000

Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Chromium III and compounds		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Chromium(VI)		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Diphenylamine		
Soil, Non-carcinogenic	1.0520000000	20615.6475116208
Soil, Carcinogenic	1.0520000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000

Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: 2,4-Dinitrotoluene

Soil, Non-carcinogenic	1.0780000000	1643.7903304263
Soil, Carcinogenic	1.0780000000	7.4447513812
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: 2,6-Dinitrotoluene

Soil, Non-carcinogenic	0.4180000000	827.0571959516
Soil, Carcinogenic	0.4180000000	1.5441448098
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: 2,4,6-Trinitrotoluene

Soil, Non-carcinogenic	0.2180000000	515.3329275284
Soil, Carcinogenic	0.2180000000	94.7826086957
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Octahydro-1357-tetranitro-1357-tetrazocine (HMX)

Soil, Non-carcinogenic	0.3010000000	56976.2819663442
Soil, Carcinogenic	0.3010000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)

Soil, Non-carcinogenic	5.2800000000	3298.0065611592
Soil, Carcinogenic	5.2800000000	27.9809220986
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Nitroglycerine

Soil, Non-carcinogenic	20.2100000000	82.4625812134
Soil, Carcinogenic	20.2100000000	135.8198924731
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Mercury (inorganic)

Soil, Non-carcinogenic	0.0216000000	1.6424637717
Soil, Carcinogenic	0.0216000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000

Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Diethylphthalate

Soil, Non-carcinogenic	0.5290000000	897066.304900797
Soil, Carcinogenic	0.5290000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Dimethylphthalate

Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Fluoranthene

Soil, Non-carcinogenic	0.0830000000	30311.8837192316
Soil, Carcinogenic	0.0830000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000

Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Naphthalene

Soil, Non-carcinogenic	0.0178000000	25.1423686626
Soil, Carcinogenic	0.0178000000	0.6872586873
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Benz(a)anthracene

Soil, Non-carcinogenic	0.0270000000	0.0000000000
Soil, Carcinogenic	0.0270000000	2.5471698113
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Bis(2-ethylhexyl)phthalate

Soil, Non-carcinogenic	0.2970000000	16437.9922403821
Soil, Carcinogenic	0.2970000000	165.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000

Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Dibutylphthalate		
Soil, Non-carcinogenic	11.6000000000	82462.5595098880
Soil, Carcinogenic	11.6000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Selenium		
Soil, Non-carcinogenic	0.4100000000	5833.1353386989
Soil, Carcinogenic	0.4100000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Barium and compounds		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000

Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Silver and compounds		
Soil, Non-carcinogenic	0.1900000000	5840.0083604330
Soil, Carcinogenic	0.1900000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Cadmium and compounds		
Soil, Non-carcinogenic	0.0000000000	0.0000000000
Soil, Carcinogenic	0.0000000000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000
CHEMICAL: Dioxin		
Soil, Non-carcinogenic	0.0000050180	0.0060640784
Soil, Carcinogenic	0.0000050180	0.0000122003
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: Perchlorate

Soil, Non-carcinogenic	0.0055600000	817.5989647668
Soil, Carcinogenic	0.0055600000	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

CHEMICAL: 3,3'-Dimethylbenzidine

Soil, Non-carcinogenic	0.0000000100	0.0000000000
Soil, Carcinogenic	0.0000000100	0.0000000000
Groundwater, Non-carcinogenic	0.0000000000	0.0000000000
Groundwater, Carcinogenic	0.0000000000	0.0000000000
Surface Water, Non-carcinogenic	0.0000000000	0.0000000000
Surface Water, Carcinogenic	0.0000000000	0.0000000000
Air, Non-carcinogenic	0.0000000000	0.0000000000
Air, Carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Non-carcinogenic	0.0000000000	0.0000000000
Meat/Eggs/Dairy, Carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Non-carcinogenic	0.0000000000	0.0000000000
Fruit/Vegetables, Carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Non-carcinogenic	0.0000000000	0.0000000000
Fish/Shellfish, Carcinogenic	0.0000000000	0.0000000000

********** CALCULATION ALGORITHMS **********

********** Hazard/Risk Associated with INGESTION via SOIL **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times IR \times CF \times EF \times ED}{BW \times AT}$$

where :

- CS is the Chemical Concentration in the Soil (mg/kg)
- IR is the Ingestion Rate (mgsoil/day)
- CF is the Conversion Factor (10 ^ -6 Kg/mg)
- EF is the Exposure Frequency (day/years)
- ED is the Exposure Duration (years)
- BW is the Body Weight (Kg)

AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
IR	200.00	114.28; 489.50(M)	100.00	100.00
CF	0.000001	0.000001	0.000001	0.000001
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SOIL **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times CF \times ABS \times EF \times (ED \times SA \times AF) \times DFSadj}{BW \times AT}$$

where :
CS is the Chemical Concentration in the Soil (mg/kg)
CF is the Conversion Factor (10 ^ -6 Kg/mg)
SA is the Skin Surface Area for Contact (cm^2/event)
AF is the Soil to Skin Adherence Factor (unitless)
ABS is the Absorption Factor (unitless)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years)
DFS is the Residential soil dermal contact factor (mg-year/kg-day)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)
(RfDo modified for dermal exposure: RfDo x gastrointestinal absorption factor; CSFo modified for dermal exposure: CSFo/gastrointestinal absorption factor)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
CF	0.000001	0.000001	0.000001	0.000001
SA	2800	Incl. in DFSadj.	3470	3470
AF	0.12	0.07	0.12	0.12
ABS	User Defined	User Defined	User Defined	User Defined
EF	350	350	250	250
ED	6	Incl. in DFSadj.	25	25
DFSadj	Not Used	361; 1445 (M)	25	25

BW	15	Incl. in DFSadj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

******** Hazard/Risk Associated with INHALATION OF PARTICULATES via SOIL *********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CS \times ET \times EF \times ED \times [(1/VF) + (1/PEF)] \times CF}{AT}$$

where :
CS is the Chemical Concentration in the Soil (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
VF is the Volatilization factor (m^3/Kg)
PEF is the Particulate Emission Factor (m^3/Kg)
AT is the Averaging Time (days)
CF is used only for carcinogenic calculation (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CS	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age-adj (M)	25	25
VF	0.5	0.5	0.5	0.5
PEF	1.36E+9	1.36E+9	1.36E+9	1.36E+9
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via SOIL **********

Using the following Calculation :

Ingestion:
Intake (mg/Kg-day) = CS x (((EF x IF x CF1)/AT)+((IR x CF)/BW)))

Inhalation:
Intake (mg/Kg-day) = CS x (((EF x ED x ET x CF2)/AT x VF)+((CF2)/VF)))

Dermal:

Intake (mg/Kg-day) = CS x (((EF x DFS x ABS x CF1)/AT)+((SA x AF x ABS x CF1)/BW)))

where :
 CS is the Chemical Concentration in the Soil (mg/kg)
 ET is the Exposure Time (hr/hr)
 EF is the Exposure Frequency (day/years)
 ED is the exposure duration (years)
 IFS is the adjusted soil ingestion rate (mg-yr/kg-d)
 IRS is the soil ingestion rate (mg/day)
 DFS is the adjusted soil dermal contact factor (mg-yr/kg-d)
 ABS is the absorption factor
 AF is the adherence factor (mg/cm2)
 BW is the body weight (kg)
 VF is the volatilization factor (m^3/kg)
 AT is the Averaging Time (days)
 CF1 is the conversion factor (kg/mg)
 CF2 is the conversion factor (µg/mg)

RESIDENTIAL	CARCINOGENIC
CS	User Defined
ET	1.00
EF	350
ED	30
IFS	114.28
IRS	200.00
DFS	361
ABS	User Defined
AF	0.12
BW	15
VF	0.5
AT	365 x 6
CF1	0.000001
CF2	1000

********** Hazard/Risk Associated with DRINKING WELL WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

where :
 CW is the Chemical Concentration in Water (mg/L)
 IR is the Ingestion Rate (Liters/day)
 EF is the Exposure Frequency (days/year)
 ED is the Exposure Duration (years)

BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
IR	1.00	1.09; 3.39(M)	2.00	2.00
EF	350	350	250	250
ED	6	Incl. in IR Adj.	25	25
BW	15	Incl. in IR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********
Using the following Calculation :

Ingestion:
Intake (mg/Kg-day) = CW x (((EF x IF)/AT)+(IR/BW)))

where :
CW is the Chemical Concentration in the Groundwater (mg/kg)
EF is the Exposure Frequency (day/years)
IF is the adjusted water ingestion rate (L-yr/kg-d)
IR is the water ingestion rate (L/day)
BW is the body weight (kg)
AT is the Averaging Time (days)

	RESIDENTIAL CARCINOGENIC
CW	User Defined
EF	350
IF	1.086
IR	1.00
BW	15
AT	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via WELL WATER **********

Using the following Calculation :

$$\text{Intake} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
PC is the Dermal Permeability Constant (cm/hr)
SA is the Surface Area Exposed (cm^2)
ET is the Exposure Time (hours/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
CF is the Volumetric Conversion (1 Liter/1000 cm^3)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	0.2	0.2	1.0	1.0
EF	350	350	250	250
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********* Hazard/Risk Associated with INCIDENTAL INGESTION via SWIMMING **********

Using the following Calculation :

$$\text{Intake (mg/Kg/day)} = \frac{CW \times CR \times EF \times ET \times ED}{BW \times AT}$$

where :
CW is the Chemical Concentration in Water (mg/L)
CR is the Contact Rate (Liters/hour)
EF is the Exposure Frequency (events/year)
ET is the Exposure Time (hours/event)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
CR	0.05	.037	0.05	0.05

EF	7	7	7	7
ET	2.6	2.6	2.6	2.6
ED	6	Incl. in CR Adj.	25	25
BW	15	Incl. in CR Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with DERMAL CONTACT via SURFACE WATER **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

where :

CW is the Chemical Concentration in Water (mg/L)
PC is the Dermal Permeability Constant (cm/hr)
SA is the Surface Area Exposed (cm^2)
ET is the Exposure Time (hours/day)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years)
CF is the Volumetric Conversion (1 Liter/1000 cm^3)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CW	User Defined	User Defined	User Defined	User Defined
PC	User Defined	User Defined	User Defined	User Defined
SA	7500	9200	820	820
ET	2.6	2.6	2.6	2.6
EF	7	7	7	7
ED	6	Incl. in SA Adj.	25	25
CF	.001	.001	.001	.001
BW	15	Incl. in SA Adj.	80	80
AT	365 x 6	365 x 70	365 x 25	365 x 70

********** Hazard/Risk Associated with INHALATION via AIR **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CA \times ET \times EF \times ED}{AT \times CF}$$

where :

CA is the Chemical Concentration in Air (mg/m^3)
ET is the Exposure Time (hours/hour)
EF is the Exposure Frequency (days/year)
ED is the Exposure Duration (years) for non-carcinogens and carcinogens
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)
ED is adjusted for mutagens as follows:
[(IUR x 20)+(IUR x 12)+(IUR x 30)+(IUR x 14)]

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CA	User Defined	User Defined	User Defined	User Defined
ET	1.00	1.00	8.00	8.00
EF	350	350	250	250
ED	6	30; age adj. (M)	25	25
AT	365 x 6	365 x 70	365 x 25	365 x 70
CF	-	1000	-	1000

********** Risk Associated with Vinyl Chloride via AIR **********

Using the following Calculation :

Inhalation:
Intake (mg/Kg-day) = (CA x ((EF x ED x ET)/AT)))/CF

where :
CA is the Chemical Concentration in the Air (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

	RESIDENTIAL CARCINOGENIC
CW	User Defined
ET	1.00
EF	350
ED	30
AT	365 x 70
CF	1000

********** Risk Associated with Vinyl Chloride via GROUNDWATER **********

Using the following Calculation :

Inhalation:
Intake (mg/Kg-day) = (CW x (((EF x ED x ET x VF)/AT)+(VF)))/CF

where :
CW is the Chemical Concentration in the Groundwater (mg/kg)
ET is the Exposure Time (hr/hr)
EF is the Exposure Frequency (day/years)
ED is the exposure duration (years)
VF is the volatilization factor (L/m^3)
AT is the Averaging Time (days)
CF is the conversion factor (µg/mg)

	RESIDENTIAL CARCINOGENIC
CW	User Defined
ET	1.00
EF	350
ED	30
VF	0.5
AT	365 x 70
CF	1000

********** Hazard/Risk Associated with INGESTION of FOOD PRODUCTS **********

Using the following Calculation :

$$\text{Intake (mg/Kg-day)} = \frac{CF \times IR \times FI \times EF \times ED}{BW \times AT}$$

where :
CF is the Chemical Concentration in the Food (mg/Kg)
IR is the Ingestion Rate (kg/day)
FI is the Fraction Ingested from the Contaminated Source
EF is the Exposure Frequency (meals/year)
ED is the Exposure Duration (years)
BW is the Body Weight (Kg)
AT is the Averaging Time (days)

MEAT/EGG/DAIRY PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC

CF	User Defined	User Defined	User Defined	User Defined
IR	0.280	0.280	0.280	0.280
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FRUIT/VEGETABLE PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.122	0.122	0.122	0.122
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

FISH/SHELLFISH PRODUCTS :

	RESIDENTIAL		COMMERCIAL	
	NON-CARCINOGENIC	CARCINOGENIC	NON-CARCINOGENIC	CARCINOGENIC
CF	User Defined	User Defined	User Defined	User Defined
IR	0.054	0.054	0.054	0.054
FI	1	1	1	1
EF	350	350	350	350
ED	30	Incl. in IR Adj.	25	25
BW	80	Incl. in IR Adj.	80	80
AT	365 x 30	365 x 70	365 x 25	365 x 70

****
*→